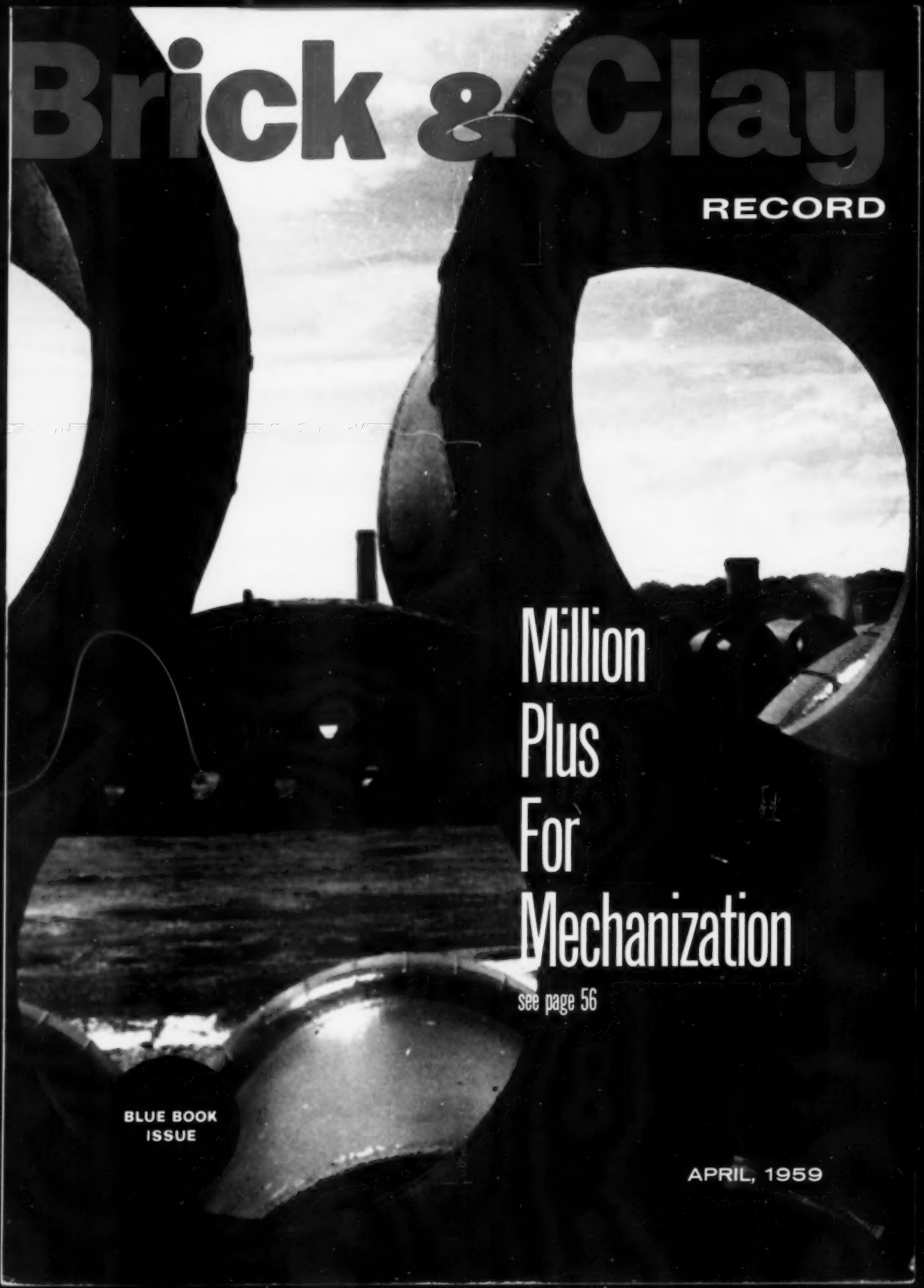
Brick & Clay

RECORD



Million Plus For Mechanization

see page 56

BLUE BOOK ISSUE

APRIL, 1959

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delivers { ***highest product quality***
maximum production speed
greatest ultimate profits

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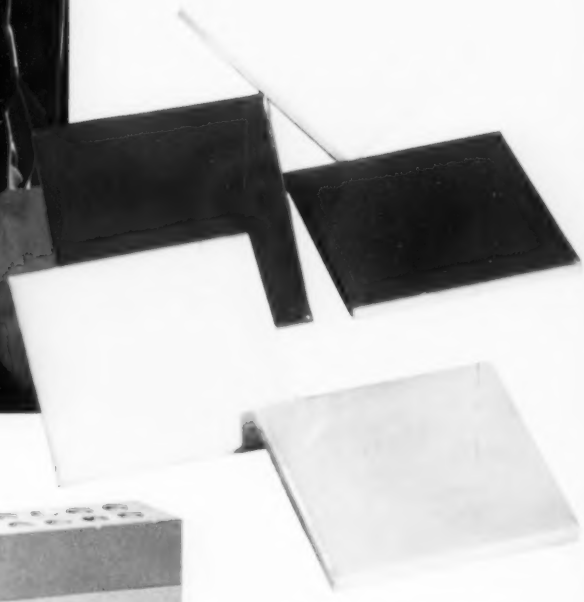

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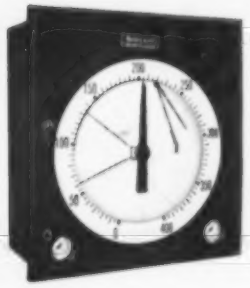

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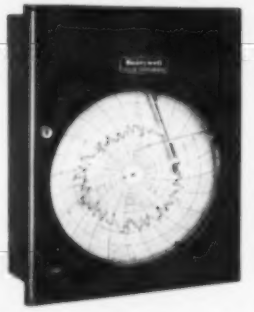

Brown Integrating Recorder—Electronic integrator totals the flow and indicates on a direct reading counter.

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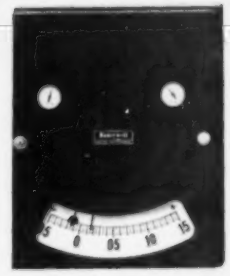

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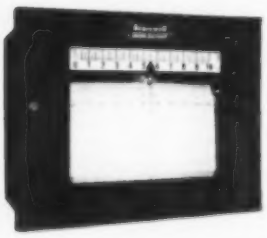

***ElectroniK* Strip Chart Recorder**—Single or Multiple Point . . . Records variables in wide, easily read chart.

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FEATURES

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Clay Bonded Block Meet 62

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LEADING CLAY JOURNAL OF THE WORLD

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Brick Refractories Structural Tile

Drain Tile Terra Cotta Roofing Tile Clay Aggregate

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for the Ceramic Industry by

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Swindell-Dressler Corporation provides complete service in plant layout, design and construction supervision for the ceramic industry.

Based upon specialized experience and knowledge of the industry's requirements, our engineering service is offered typically in three basic phases available to the client separately or collectively as the need dictates.

• PHASE 1 applies where plans have not been developed and there is still uncertainty as to the cost of the proposed plant. This phase includes the preparation of a report bringing together sufficient data and cost estimates to present a clear overall picture of the proposed project. In application, this phase enables the client to make decisions regarding continuance of the project or its abandonment for reasons of cost or other pertinent factors.

• PHASE 2 carries the project forward through the layout and design stages to completion of finished plans and specifications for the proposed plant and equipment installations.

• PHASE 3 may follow upon completion of Phase 2 or be undertaken simultaneously. Phase 3 covers management of the entire program including the securing and evaluation of bids, purchasing, payment of the bills and supervising the performance of the contractors. Thus the client is relieved of all coordination activity, purchasing problems and the numerous other details that are an inherent part of any construction program. Phase 3 is especially valuable to the client lacking in manpower facilities and can be a definite aid in expediting the entire construction program.

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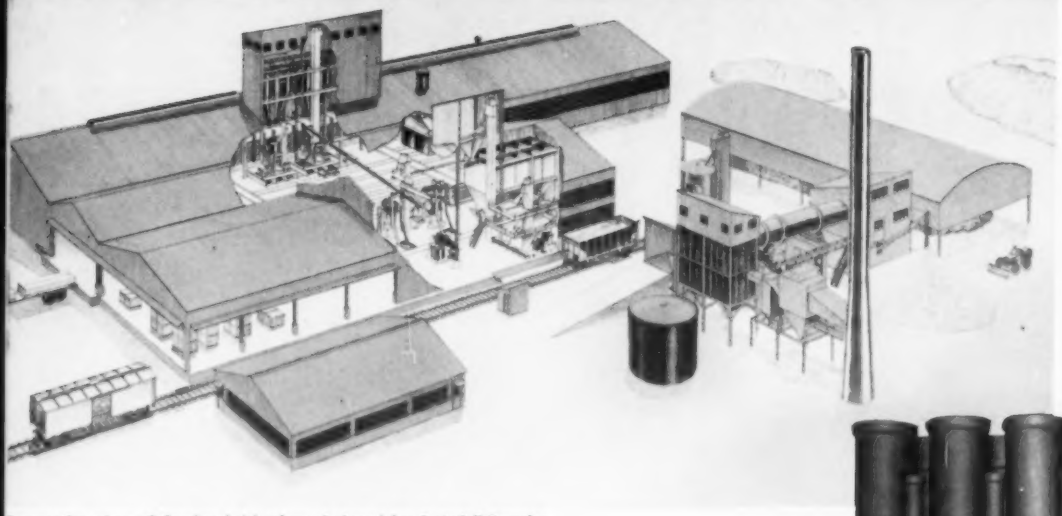
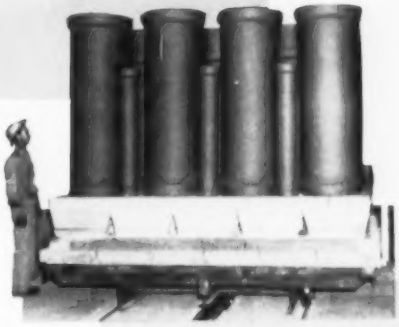


Perspective view of fireclay brick plant designed by Swindell-Dressler



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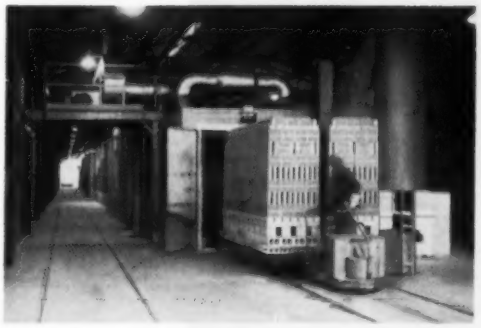

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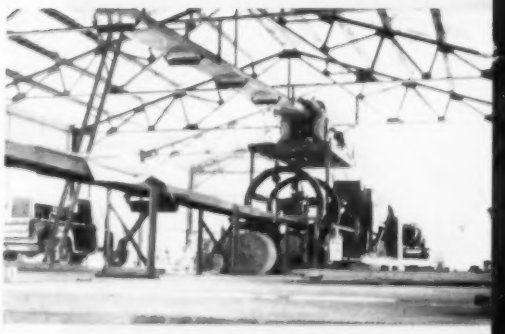

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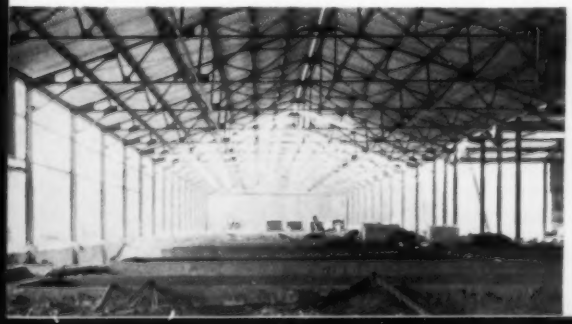

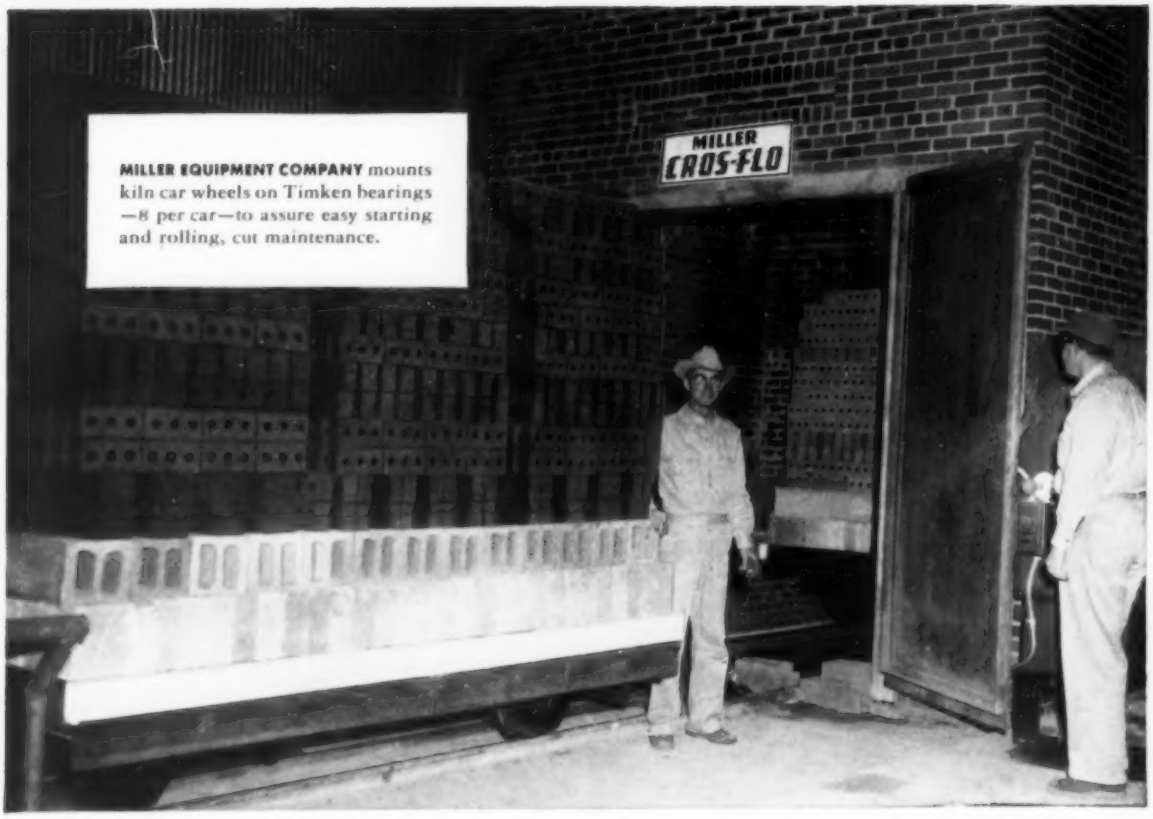
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One man can push kiln car on TIMKEN® bearings! Wheels need lubrication only once in three months!

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Timken bearings practically eliminate friction. They are geometrically designed to roll true. And they're precision-made to live up to their design. They run smoother.

Timken bearings make closures more effective. Lubricant stays in. Dust and dirt stay out. Both lubricant and maintenance time are saved.

The tapered design of Timken bearings lets them take *both* radial and thrust loads in any combination. Full line contact between rollers and races gives Timken bearings extra load-carrying capacity. The rollers and races are case-carburized, giving them hard, wear-resistant surfaces and tough, shock-resistant cores. They take heavy loads, take them longer.

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TIMKEN *TAPERED ROLLER BEARINGS ROLL THE LOAD*

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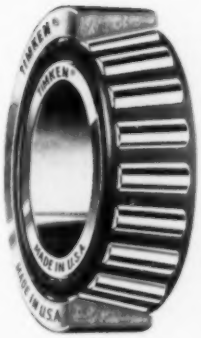
TIMKEN TAPERED ROLLER BEARINGS

another reason why Miller Kiln Cars MEASURE-UP to your specifications.



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Allied Engineering Reports Further on Precalcined Clay

Supplementing our recent report on the Burns Process for precalcined, lightweight block, we want to share with heavy-clayware manufacturers some results of recent experiences in precalcining high-carbon sulfur clays.

One can go just so far, economically, from a firing-cycle standpoint, considering investment and operating costs. Likewise, the additional cost of preparing the clays, to overcome oxidation problems, has to be carefully considered.

Test No. 1

Figure I (below) shows a curve for firing in a tunnel kiln the toughest such fire clay we have encountered for brick. Prior to the installation of the tunnel kiln, this clay was fired in periodic kilns up to 1200° F., when the fires were shut off and the kilns allowed to burn out the combustibles. When the kiln temperature had dropped to ± 200° F., the kiln was relighted and the brick fired off on a normal cycle.

Today this material is being satisfactorily fired in a tunnel kiln, *but* one properly proportioned and equipped to produce the foregoing firing curve. The kiln is 520-feet long, with a 320-foot preheat zone. On the 72-hour firing cycle, it produces 60,000 brick per 24 hours. It has produced up to 64,000 brick per 24 hours, but this is not recommended.

Test No. 2

Figure II (at right) shows tests run on a high-carbon clay containing 1.8% carbon—0.7% carbon combined with the clay and the balance of 1.1% carbon due to a small seam of coal in the middle of the clay vein.

The clay, as received from the plant screen, was used as raw clay and also as grog calcined at 1400° F. in 2½ hours. Two bodies were made in the de-airing machine: one consisting of 100% raw clay; the other, 50% raw clay plus 50% calcined grog.

Both clays appear to work equally well. They were formed into 1¾" x 1¾" x 4½" bars, then dried and fired with a large excess of air, several hundred per cent. The firing rate was at 150° F. per hour to 1200° F., then up to 1720° F. at 40° F. per hour. This gave a total firing cycle of 21¾ hours. The bars were drawn at the temperatures shown in Figure II. Note the carbon in the 50-50 clay-grog mix is all gone at 1700° F. The total elapsed time was 17½ hours. The pure clay, fired up to 2200° F., lost no further carbon, and bloated at this temperature. This shows the striking effect of precalcining at relatively low 1400° F. temperature.

Production Advantages

Let us repeat, from our recent bulletin, the production advantages. All problems now experienced from drying and firing—such as shrinkage faults, unstable setting, shrinkage cracks, slabbing, pinholes, blistering, bloating, warping, black coring, red hearts or staining, popping, scumming and kiln marking—could be eliminated or greatly minimized with precalcined "body" materials.

Faster, safer firing cycles would result. Manufacturers would get much greater kiln production, almost quadrupled in some cases. Larger shapes and more complicated designs could be produced. (All this has been proved in current production of certain refractories, porcelains and steatites.) Initial investment per unit of production would also be lower.

We are in a position to help you with rotary-type calcining kilns, rotating hearth calciners and other types for special calcining work.

Write, wire or phone ALLIED Engineering Division, Ferro Corporation, 4150 E. 56th St., Cleveland 5, Ohio.

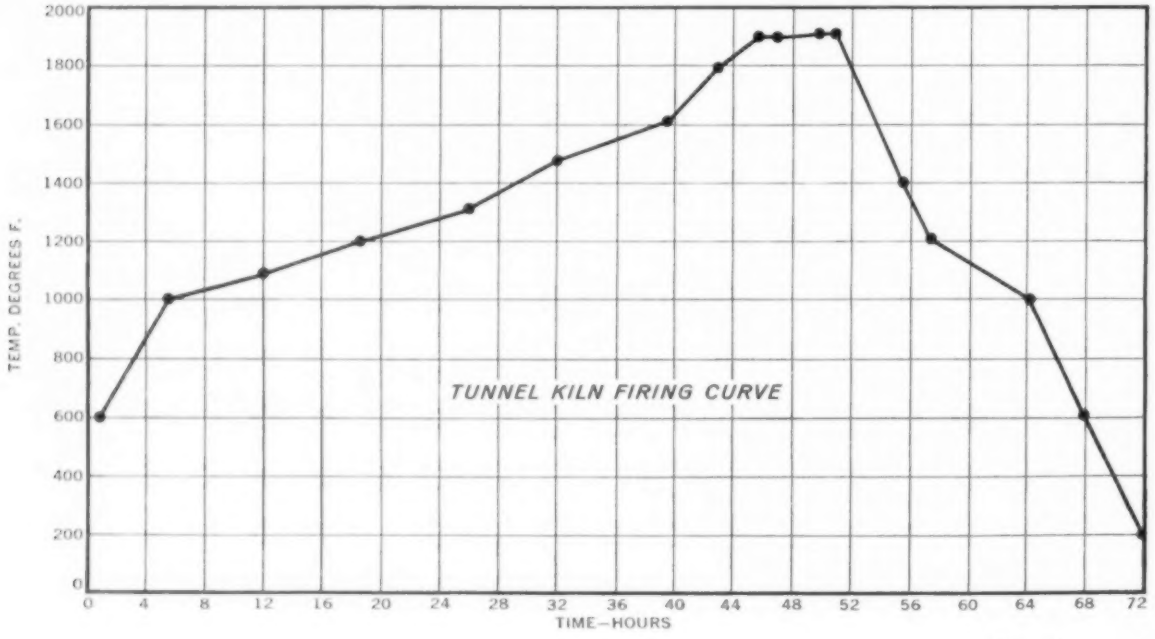

Figure I

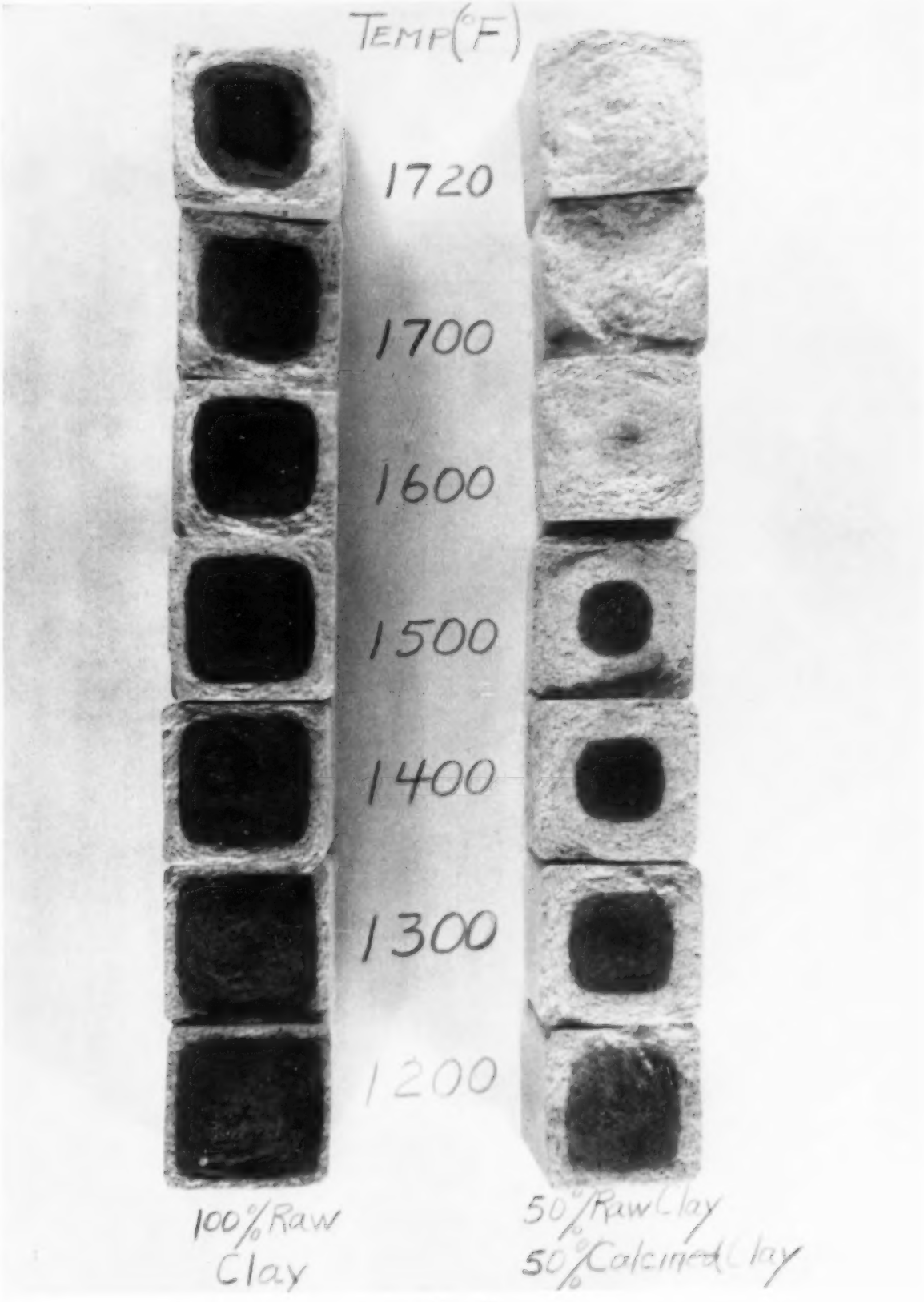
TEMP(°F)
1720
1700
1600
1500
1400
1300
1200
100% Raw Clay
50% Raw Clay
50% Calcined Clay

Figure 11

PACO

CAR TOPS

cut replacement cost by as much as 50%!

It's a fact . . . nine out of ten users of PACO CAR TOPS are satisfied customers—and all report replacement savings up to 50%! For the utmost in service, you require a good first quality car top, highly resistant to spalling, and a good hot load test . . . and you get just that when you standardize on PACO.

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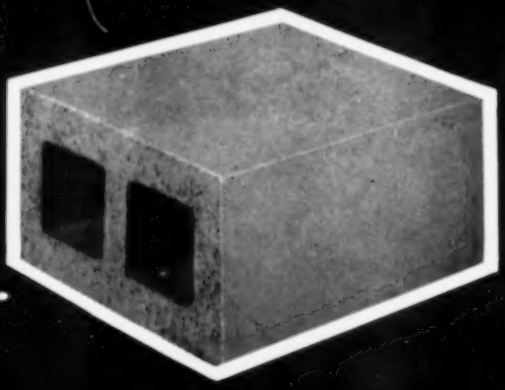

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Vitro Cadmium Selenium Colors are available in many shades from lemon yellows through oranges to brilliant reds. Also, they can be used to produce a very nice maroon, and at reduced percentages give beautiful pastels.

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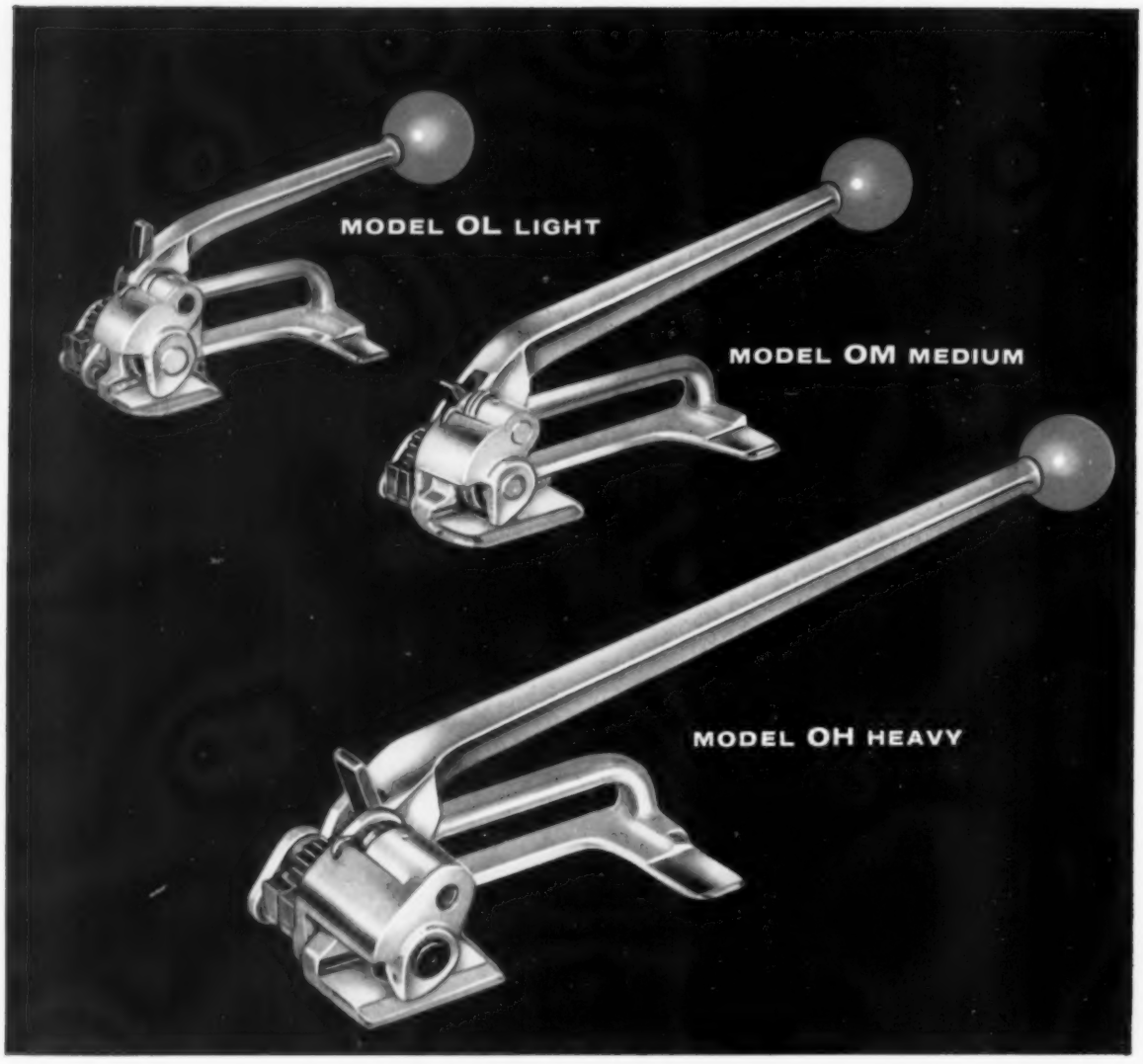

New Heavy Duty Steel Strapping Tool completes STANLEY Line of "O" Tighteners

Stanley's new OH Tightener is the only heavy duty friction wheel steel strapping hand tool on the market today for use with cold rolled ¾" and 1¼" x .031 and .035 steel strap. This portable, lightweight, high leverage tightener efficiently packages products and containers of every type, size, shape and weight . . . increasing packaging flexibility. Seals applied behind the tensioning wheel eliminate strap waste.

Strapplication Data available from Stanley Steel Strapping, Division of The Stanley Works, Dept. D, 1308 Corbin Ave., New Britain, Conn.

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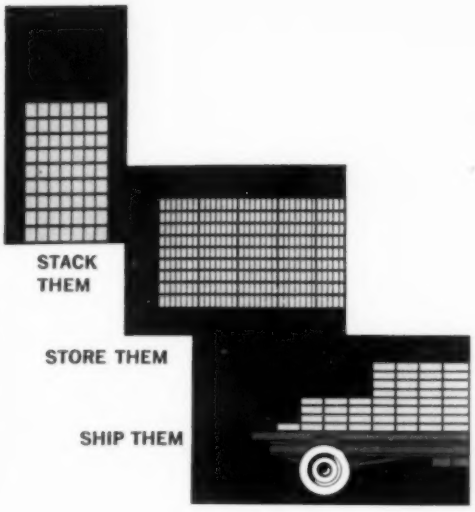

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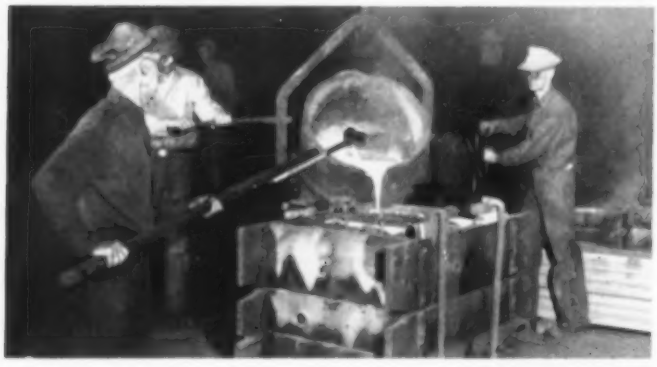


FOUNDERS

Castings To 12 Tons Ea.
Gray Iron—All Grades
Semi-Stl. Castings
Hi-Ni (Same Analysis As Ni-Hard With Impact Strength Added)
Moly-Iron For Gears

MACHINISTS

Machining On Large Or Small Scale.
Speed With Accuracy
Steel Fabricating
Stock Steel

Toronto Foundry & Machine Co.

ENGINEERS ★ FOUNDERS ★ MACHINISTS

TORONTO, OHIO

10 hours' work in an 8-hour shift!

That's the production advantage of the Yale Industrial Tractor Shovel

Here are the features that make the Yale Industrial Tractor Shovel outstanding...

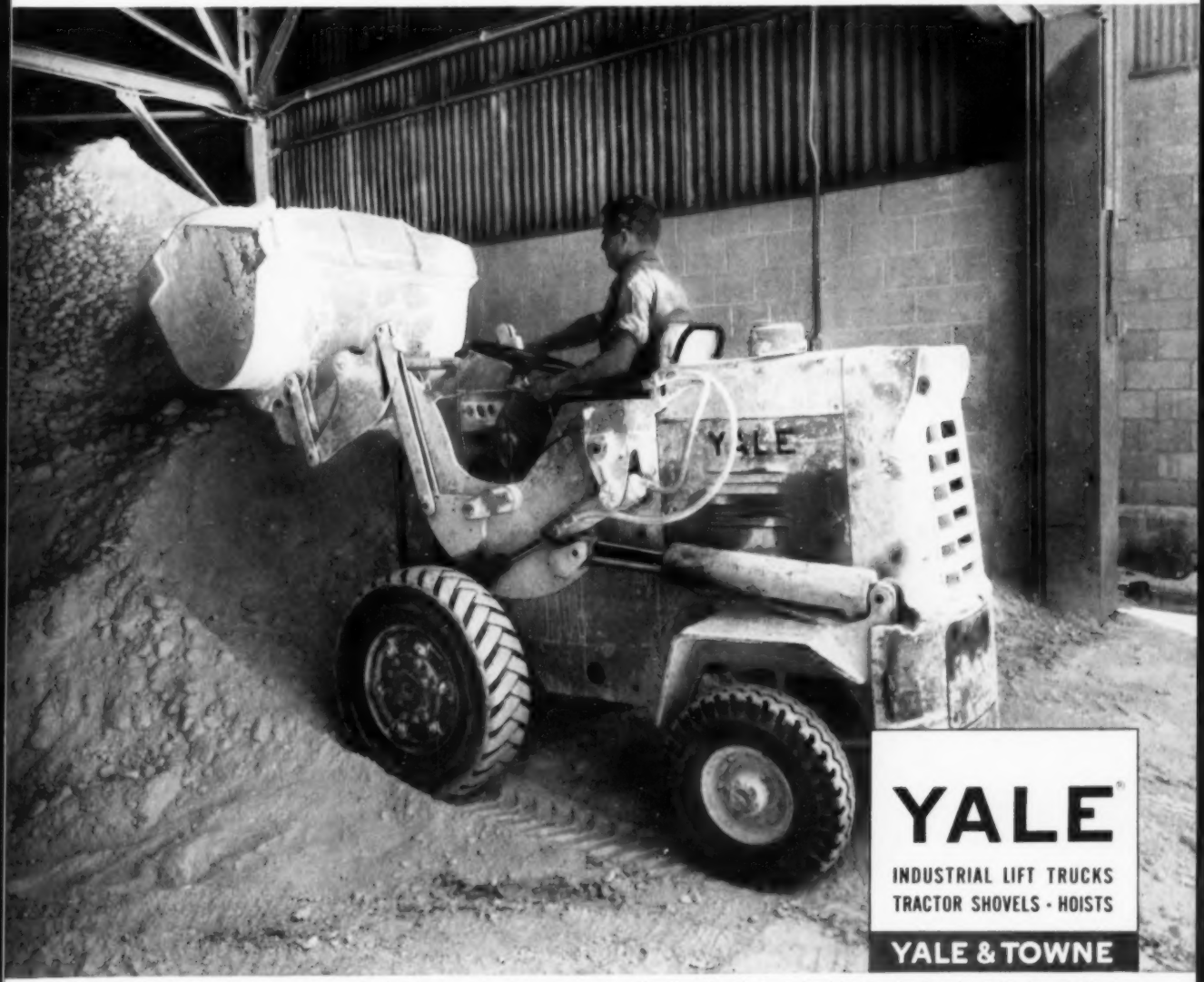
PRECISELY CONTROLLED HORSEPOWER! 72 hp. 6 cylinder engine provides smooth power through matched torque converter and Yale torque transmission (fully automatic). One speed in both directions. Inching control permits delicate close-quarter maneuvering. Extra punch for impact loading. Accelerates to 13 mph. in 5½ seconds.

PERFORMANCE! 2500 lb. carry capacity. Exclusive 45° bucket tipback permits faster loading and lowest carry position for faster transport with minimum spillage. 6' dumping clearance permits dumping into bins and hoppers out of range of other—even larger—tractor shovels. Shortest turning radius, too—only 73".

SAFETY! Safety-curve lifting mechanism members never rise alongside the operator. Front and back working lights provide extra security.

DEPENDABILITY! Rugged design • sealed brakes and electrical system • protected steering linkage • 10 ply tires—all adds up to more work at less cost...more production hours. Full range of buckets and attachments available.

Field applications prove that these features add up to 25% more work per hour—10 hours' work in an 8-hour shift. For a demonstration in your plant or complete information contact your Yale representative. Or write The Yale & Towne Mfg. Co., Yale Materials Handling Div., Phila. 15, Pa. Dept. YT 2-V.



YALE®

INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS · HOISTS

YALE & TOWNE

Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark.
Products: Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists

Here's proof that B&W Insulating

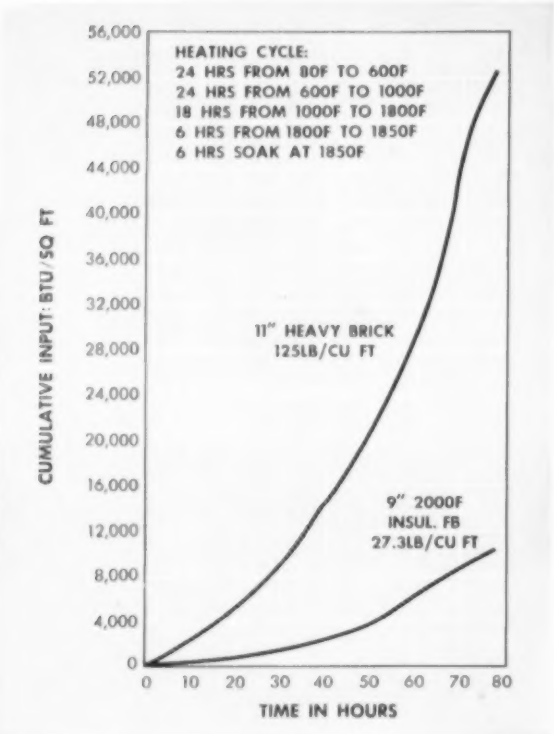


Fig. 1—This table shows the relative heat input required per cycle for two types of periodic kiln crowns. Studies were made comparing the combined heat flow and heat storage on a 78-hour firing cycle of a crown consisting of 9 inches of firebrick plus 2 inches of common brick at 125 pounds per cubic foot vs. a crown of 9 inches of insulating firebrick weighing 27.3 pounds per cubic foot (1.6 pounds per 9-inch equivalent).

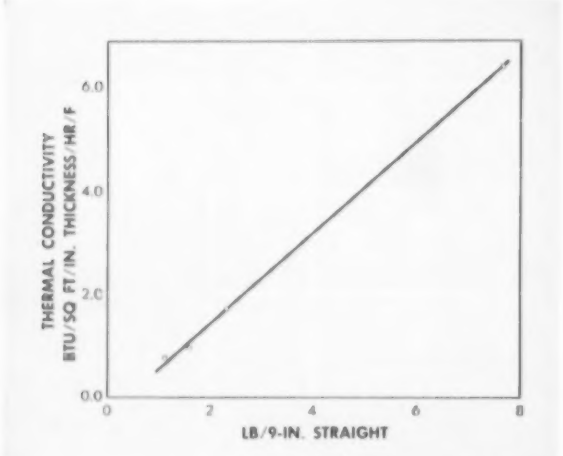


Fig. 2—This shows how the conductivity increases with weight for a group of kaolin-base refractories at a mean temperature of 900 F. The pore size assumes increasing importance in the higher temperature ranges, and of two brick having the same weight, the one with the finer pore structure will have the lower conductivity.

Reduced fuel bills and faster cycle time are two important reasons why more and more operators of periodic kilns for the manufacture of structural clay products are standardizing on B&W Insulating Firebrick—the *lightest* of all insulating firebrick.

As insulating firebrick weigh less than fireclay brick, they store and conduct less heat, which means that a smaller amount of fuel is required to bring them up to furnace temperature (see Figure 1). The low heat storage permits quicker heating and cooling of furnaces, thus helping to cut cycle time.

Unlike dense firebrick, which have relatively high thermal conductivity, Insulating Firebrick contain millions of tiny insulating air cells which cut the flow of heat through the brick . . . bounce the heat back into the

Face Brick

Fourteen 60′ x 18′ rectangular gas-fired kilns.

Results:
18.4% fuel savings.

Building Brick

Four 28′ diameter coal-fired circular kilns.

Results:
26% fuel savings.

Drainpipe

Two 32′ diameter circular gas-fired kilns.

Results:
18% fuel savings.

Firebrick cut costs in periodic kilns

kiln. The low thermal conductivity of B&W IFB means less heat is lost through the walls and roof of a furnace.

Other advantages reported for kilns where B&W Insulating Firebrick are installed include improved quality of product and reduction in rejects, made possible by the more uniform temperatures which can be maintained; savings on construction costs; and reduced overall space requirements due to thinner walls.

...and in salt glazing kilns, too

B&W Insulating Firebrick are also being widely used in salt glazing kilns where they have set new records of economy.

Due to the chemical characteristics of B&W IFB, especially K-20 and K-23, they have excellent resistance to the atmospheres of salt glazing kilns, retarding alkali attack. In fact, they give far better service than fireclay brick.

Initially, B&W Insulating Firebrick were used with a high degree of success in the *crowns* of salt glazing kilns, since these areas offered the greatest possibility for savings. B&W IFB are now being used for the construction of *complete linings of salt glaze* kilns.

Ceramic Tile

34′ diameter gas-fired kiln.

Results:
22% fuel savings.

Glazed sewer tile

Seven 32′ diameter coal-fired circular kilns *(salt glazing)*

Results:
30% fuel savings.

Core Buff Brick

34′ diameter gas-fired kiln.

Results:
25% fuel savings per ton of ware.

Face Brick

32′ diameter circular kiln with weatherproofed crowns.

Results:
20 to 30% savings.

Bulletin R-43 gives helpful data on the use of B&W Insulating Firebrick in periodic kilns. Send for your copy today.

B&W REFRACTORIES PRODUCTS:

B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide

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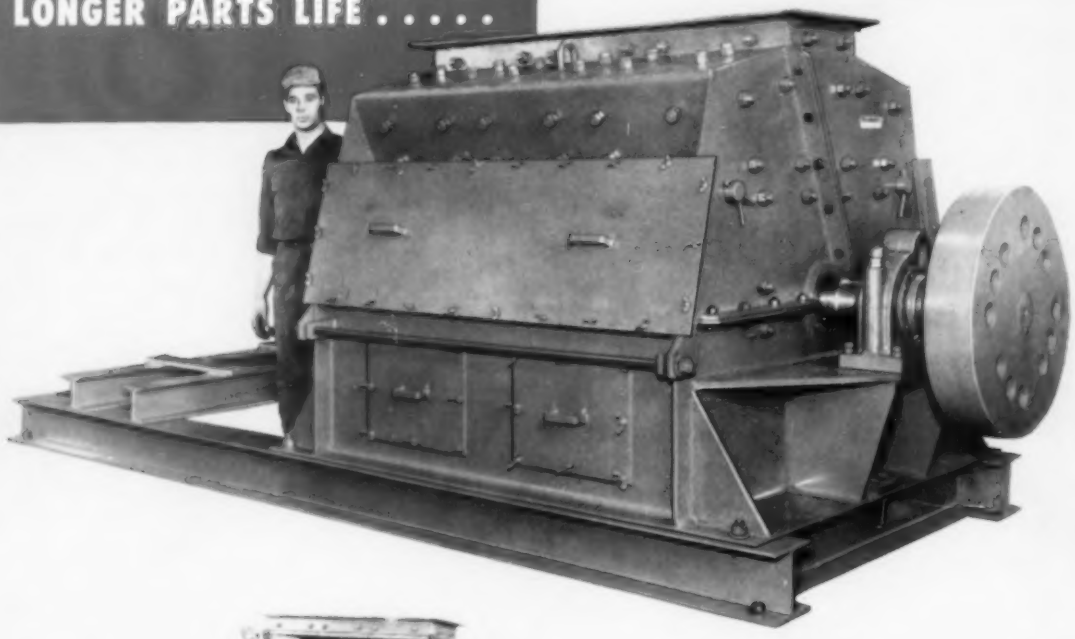
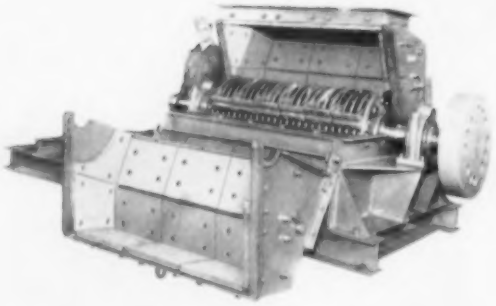
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST. NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R-571

NEW DUAL "2-POINT" ADJUSTMENT INSURES MORE UNIFORM GRINDING, LONGER PARTS LIFE . . . . .

WILLIAMS *Reversible* HAMMER MILLS





Williams Reversible Hammer Mill with cover open. Note these features:

- Super-strong reinforced steel plate frame
- Renewable wear-resistant manganese steel liners
- Heavy duty oversize forged steel rotor shaft
- Anti-friction self-aligning roller bearings in dust-tight housings
- Complete accessibility to interior for quick parts changing

It's another Williams "first"—features not available in other hammer mills—that now makes it possible to maintain the original close clearances of *both* grinding plates *AND* cage sections against the rotating hammers. This easy-to-make "2-point" adjustment, in the most critical grinding area inside the hammer mill, gives absolute assurance of consistently uniform product quality.

In addition to the advantages of the Dual "2-Point" Adjustment, a Williams Reversible Hammer Mill substantially lowers upkeep expense by cutting hammer cost. Hammers can be operated in one direction today and another tomorrow simply by installing a simple reversing switch on the driving motor. Manual reversing of hammers no longer necessary. Grate bars also last longer. The double set of reversible manganese breaker plates, which last twice as long as other types, give four times the service! Maintenance and downtime are cut 50% or more.

Get all the facts about the hammer mill with *ALL* the top features.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. • **2709 N. BROADWAY** • **ST. LOUIS 6, MO.**

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

Oldest and Largest Manufacturers of Hammer Mills in the World

PEMCO GLAZE FRITS

"FIT"

BECAUSE THEY ARE FORMULATED TO SUIT YOUR CLAY AND YOUR FIRING CONDITIONS . . .

Many sewer pipe manufacturers found it advantageous to put Pemco on the job when they switched from salt glaze to ceramic glaze. It takes research . . . it takes development . . . and Pemco has the facilities and the experienced personnel to do both.

Now is the time to strengthen your sales by strengthening your product. You can strengthen your profit too, because ceramic glazing offers savings in production and kiln maintenance.

Pemco will guide you right. Just write or call Glaze Frit Division.

RESEARCH AND A FLAME

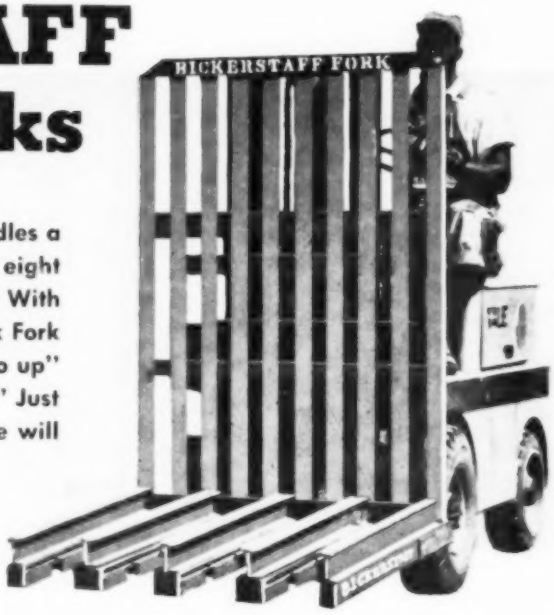
PEMCO

Ceramic frits, inorganic pigments, vitrifiable glass colors BALTIMORE 24, MARYLAND

for Low-Cost brick handling

you should know about

BICKERSTAFF Brick Forks



Just one Bickerstaff Brick Fork handles a work load that is equal to that of eight men equipped with brick barrows! With the installation of a Bickerstaff Brick Fork at your plant you will see "profits go up" and production "costs come down." Just tell us your handling problems; we will design a fork to do the job.

Tests Have Proven . . .

Bickerstaff Brick Forks actually

- **Reduce kiln loading and unloading labor time from 72 to 12 man-hours.**
- **Increases kiln turnover 25%.**
- **Loads directly from kiln to truck, freight car or inventory without rehandling.**

Write for complete details

BICKERSTAFF FORKS

BICKERSTAFF, Inc.
COLUMBUS, GEORGIA

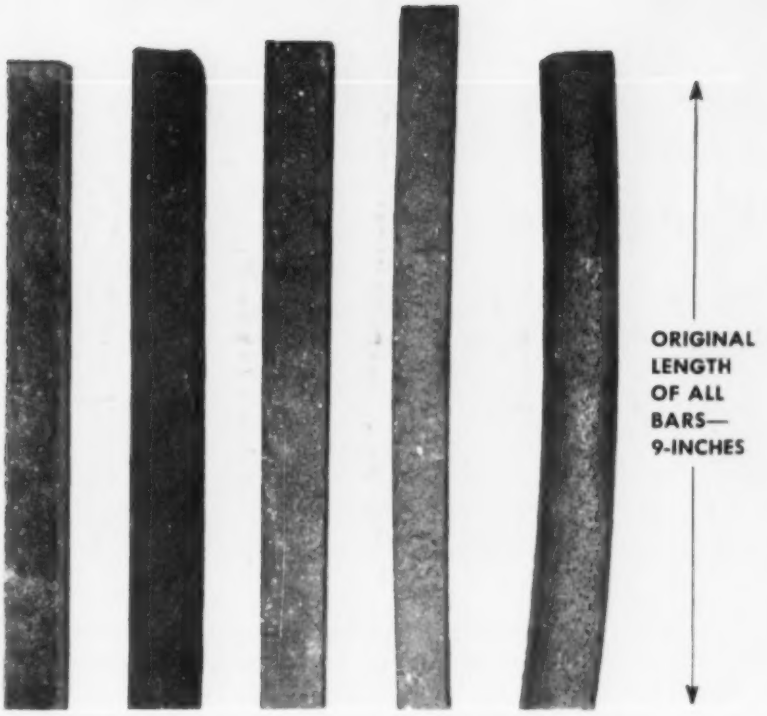
Manufacturers and Designers of
MATERIALS HANDLING EQUIPMENT

Representatives throughout the U. S. and Canada

West Coast Representatives

WALTER C. STOLL & SONS

5028 Alhambra Ave., Los Angeles, California



Oxidation of silicon carbide is most severe between 1600 and 2000°F. and is more rapid in an atmosphere of steam than in air.

Sample bars 9x⅜x⅜ cut from commercial silicon carbide brick showing growth from oxidation after 500 hours exposure in steam atmosphere at 1800° F.

A—H-W Silicon Carbide Brick B-C-D and E—Various silicon carbide brands.

Added benefits for ceramic kiln furniture from HARBISON-WALKER

Silicon Carbide Refractories

Some of the physical properties of major importance are measurably enhanced by developments in manufacturing procedures. Many sizes and shapes are formed by impact under great pressure resulting in the most homogeneous texture with higher density and strength.

High temperature firing in a closely controlled atmosphere contributes to the formation of an exceedingly impervious surface and lower permeability. These properties improve resistance to the objectionable oxidation which always is accompanied by volume increase and loss in strength.

Physical properties possessed to the *maximum degree* by H-W Silicon Carbide refractories make them best suited for many applications. Briefly these properties are—Thermal Conductivity—Resistance to Mechanical Abrasion over a wide range of temperatures—Resistance to various fluxes—High temperature strength—Low Thermal Expansion and Low Spalling Tendency.

Write for recommendations and technical assistance.

World's Most Complete Refractories Service

HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES
General Offices: **Pittsburgh 22, Pennsylvania**

A. P. GREEN

INSULATING FIREBRICK

CUT FUEL COSTS . . . INCREASE PRODUCTION IN PERIODIC KILNS

There has been a tremendous increase in the use of lightweight Insulating Firebrick for lining both round and rectangular down-draft kilns.

An average saving of 20% in fuel has resulted in kilns using Insulating Firebrick in only the kiln crowns. A 35% reduction in fuel costs was accomplished in a recent installation of A. P. Green G-26 Insulating Firebrick in the side walls and crown of a 28-foot diameter, coal-fired kiln.

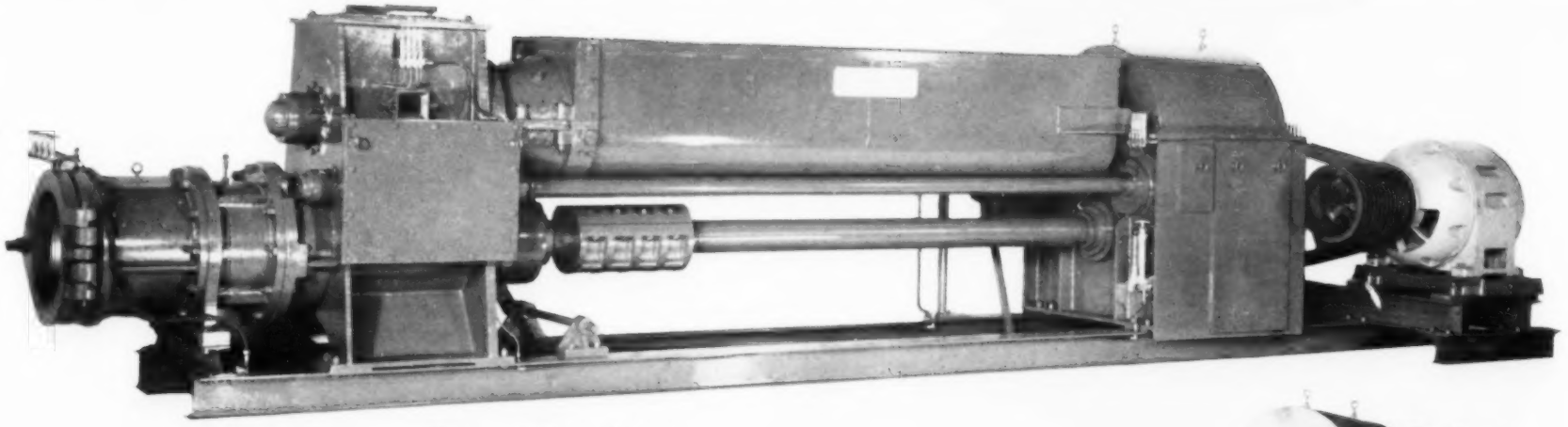
Other advantages of A. P. Green Insulating Firebrick in periodic kilns are—reduction in time of firing cycle because of the faster heating and cooling of the lightweight lining; more uniform heat distribution throughout the kiln and easier temperature control—resulting in fewer rejects and less breakage of the ware; more comfortable working conditions because of the faster cooling of the kiln; and ease of weatherproofing the much cooler crown with low melting asphalt base compounds.

Let your A. P. Green Representative assist you in selecting the proper quality of Insulating Firebrick for your kilns from A. P. Green's complete line—six different brick for temperatures from 2000° F. to 3200° F. He's listed in the classified section of your telephone directory . . . or write direct.

A. P. Green REFRACTORY PRODUCTS

A. P. GREEN FIRE BRICK COMPANY

PLANTS: Mexico, Mo. • Woodbridge, N. J. • Sulphur Springs, Texas • Jackson, Oak Hill, South Webster, Ohio • Philadelphia, Pa. • Troy, Idaho • Pueblo, Colo. • Macon, Ga. • Climax, Pa.
IN CANADA: A. P. Green Fire Brick Co., Ltd., Toronto 15, Ontario



New Chambers

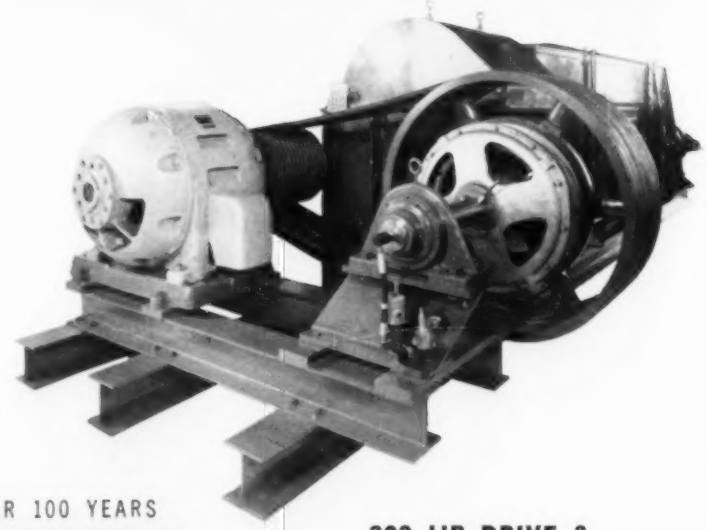
No. 12 AC

HI-POWER

"Probably the best combined machine we have ever made . . ."

Built with modern materials new to the field, and with refinements to match 1959 engineering techniques, this great new Chambers machine reflects the experience of tunnel-kiln operations, where breakdowns are intolerable. Shafts and gears are high alloy, 150,000 psi, steel; all barrel sections, adaptor and die holder are solid steel. All gears helical-cut, flame-hardened steel, with a double reduction of Approx. 12:1. Centralized lubrication.

18⅜" auger, fed by 21" augers in vacuum case. 12' pug mill tub. Point augers can taper to 16" or 13". These same efficient augers are available in the Chambers #212 with dual drives and optional vacuum pugging. Write for further details.



200 HP DRIVE & FAWICK AIRFLEX CLUTCH

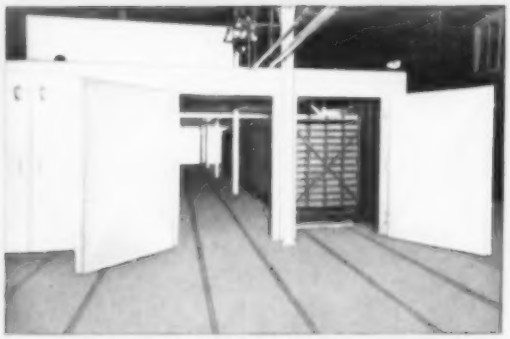
Drive has short, efficient V-belts. Main clutch remote controlled; separate pug mill clutch. Totally self-contained mounting. Motor options up to 300 HP.

SERVING YOUR INDUSTRY FOR OVER 100 YEARS

CHAMBERS 1857 1959
BROTHERS CO.
52nd & Media Streets · PHILADELPHIA 31, PA.

HEAVY CLAY DRYERS

...the product and problem dictate the design

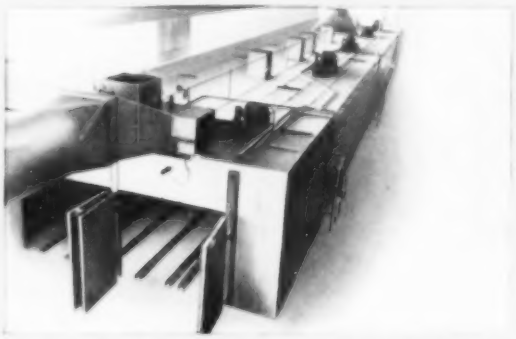


Car Type Humidity Controlled Fire Brick Dryer.

The LANLY Company's geographical location is near the heart of the country's clay products producing area. This has contributed to their 20 year acquisition of the essential knowledge and experience required to design and build the finest in heat processing equipment for the exacting varied applications in the industry.

Unprecedented competition, coupled with ever increasing costs has made it mandatory for clay products manufacturers to strengthen their relative positions in the field through the replacement of outmoded dryers. This has been accomplished in a large measure by their coordinated action with the LANLY organization.

Rack Type Humidity Controlled Refractory Dryer.



Progressive Type Humidity Controlled Quarry Tile Dryer.

Find Your Representative In The Yellow Pages

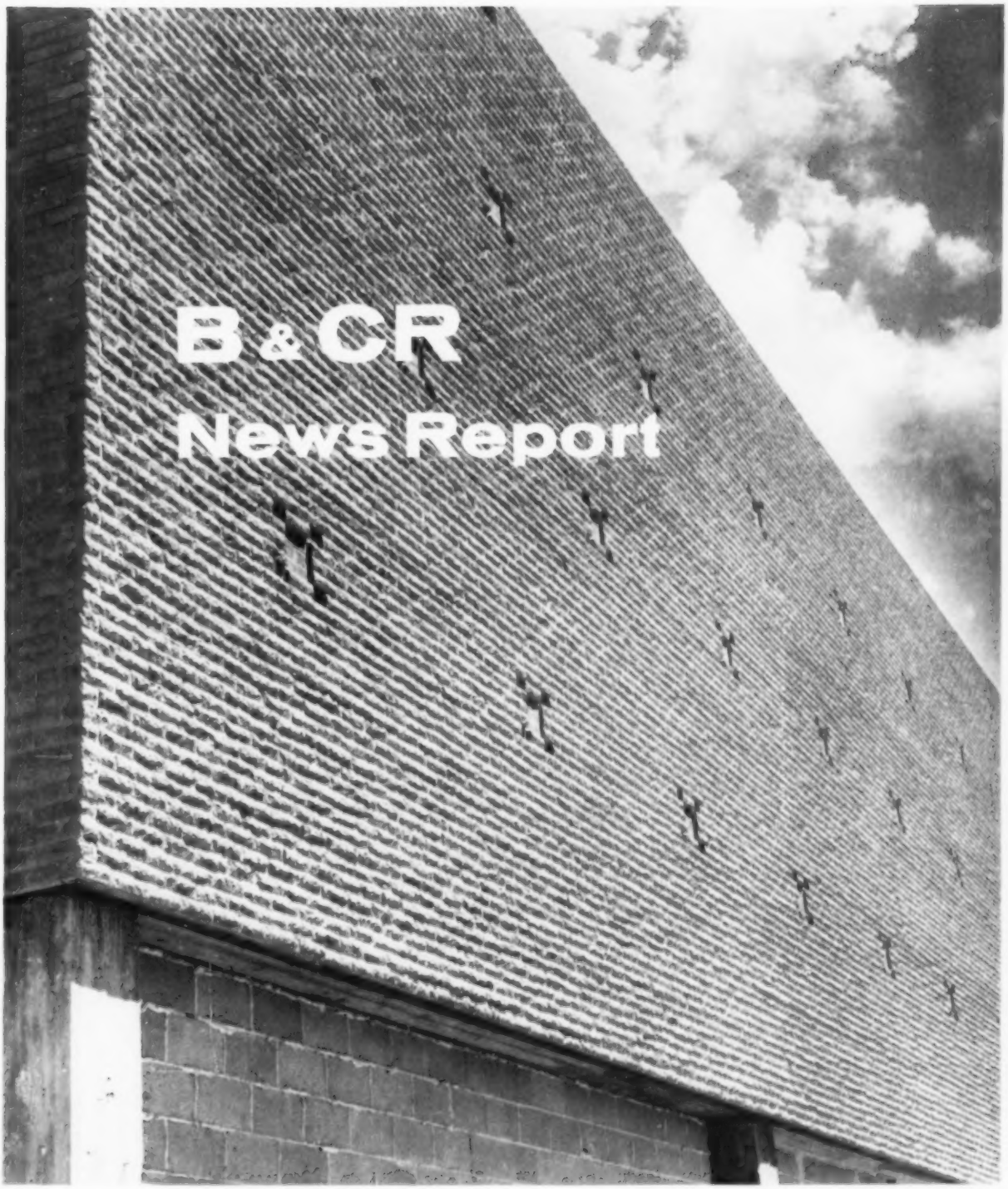
THE lanly CO.

CERAMIC OVENS & DRYERS

2800 Euclid Avenue • Cleveland 15, Ohio

LANLY Bulletin No. 572 is available for the asking. It contains a list of some of the prominent manufacturers LANLY has been privileged to serve.

Atlanta, Georgia • Birmingham, Ala. • Boston, Mass. • Chicago, Ill. • Cleveland, Ohio
Columbia, So. Carolina • Columbus, Ohio • Detroit, Mich. • Houston, Texas
Pittsburgh, Pa. • Rochester, N. Y. • San Francisco, Calif. • St. Louis, Mo.



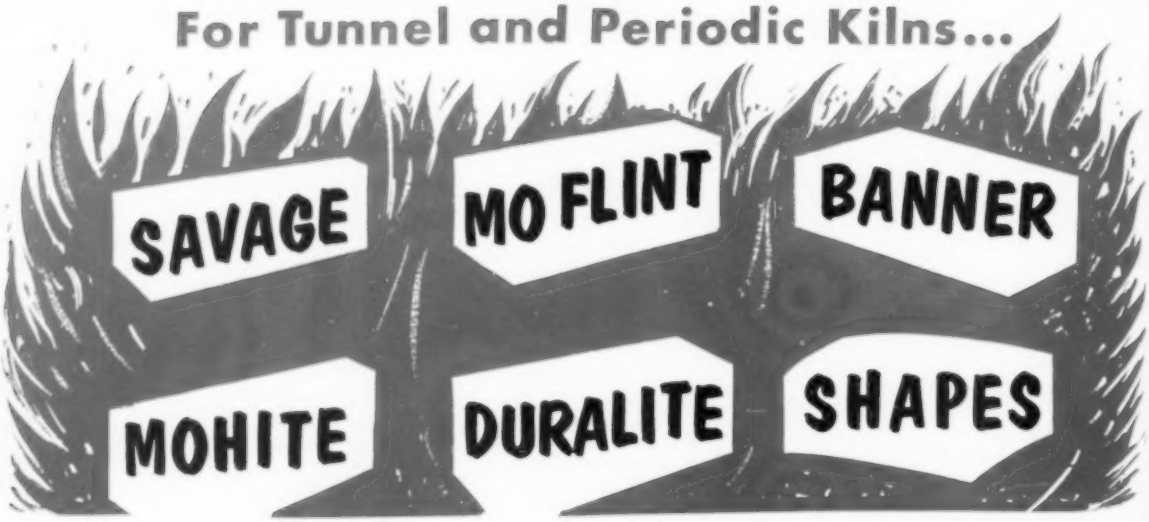
A whole shopping center, Big Town in Mesquite, Tex., used rocktaced brick supplied by Crown Brick Co., inventors of the Rocktacer machine. This building used 130,000 alone to achieve beautiful design, texture.

A complete, compact news section summarizing all developments for the industry's attention.

INDUSTRY NEWS
PRODUCT NEWS
READERS' COMMENTS
PRODUCTION IDEAS
BULLETINS

FIREBRICK
THAT CAN TAKE IT!

For Tunnel and Periodic Kilns...



Periodic and tunnel kilns need five different quality and composition fire-brick for top performance and long service. From intermediate through High Alumina Quality, WELLSVILLE FIRE BRICK COMPANY can supply refractories to your most exacting specifications. Add to this, WELLSVILLE'S many years of experience in supplying quality refractories. Whether it's a new kiln or repairs, you can count on WELLSVILLE for top quality and top service. We'll be glad to assist you with recommendations on brick, shapes, castables, plastics and cements.

Write

WELLSVILLE *Fire Brick* COMPANY

WELLSVILLE MANUFACTURERS MISSOURI

Industry Men Go To Congress To Fight Depletion Changes

Washington, D. C.

Witnesses representing the structural clay industry presented their views on depletion to the House Committee on Ways and Means on March 10-11. Representatives were there from brick, tile, pipe and lightweight aggregate.

Industry men went on record as opposing the Treasury Dept. in its attempt to induce Congress to specify particular treatment processes that would be considered "mining" for the purpose of computing percentage depletion on mineral products.

Neil Boldrick, vice president of Acme Brick Co. and chairman of the SCPI depletion committee, said that the Treasury proposal would "not be a mere technical amendment. Instead, at one blow, it would emasculate the brick and tile industry's depletion allowance by taking away not just a little bit but practically all of such allowance." Boldrick also took exception of the contention that brick and tile clays were of common occurence, and pointed out that some major markets are not served by local brick producers because of the lack of adequate raw material.

Thermal Processes

He also pointed out the inconsistency of the Department which would allow thermal processes to be included in the "mining" processes of certain industries, and fine grinding by others, but would deny the brick industry the inclusion of the same identical processes.

Change could emasculate industry: Boldrick

Story of continuing court fights by first company in controversy told by Dunwody.

Kenneth W. Dunwody, president of Cherokee Brick & Tile Co. and of SCPI, told the Committee the history of the depletion litigation from the standpoint of the first company (Cherokee) to engage the Treasury in litigation.

A strong picture of the apparent reluctance of the Department to accept findings of District, Circuit and Supreme courts was presented by Dunwody. It was brought out that the Department required Cherokee to go into court for the refund of each year's overpayment even though the suits were based on the same circumstances and facts of law. Dunwody suggested that if the present law were changed a large body of expensively acquired court decisions would be rendered obsolete and litigation would have to be resumed.

The contention of the Treasury Dept. that the present revenue law results in excessive allowances to the brick and tile industry was challenged by Frank Erwin, Jr., who said, "The proper way to test whether or not a depletion allowance is excessive is to compare the dollar amount of the depletion allowance with a fair compensation to the mine owner for the portion of his mineral deposit that has been taken out of the ground and used up."

Using industry averages, Erwin showed that the average brick producer receives only 70c a ton depletion allowance for his brick clay which can be made into a product selling for $14 a ton.

Drain Tile Hardships

James L. Child, Hancock Brick & Tile Co., appeared before the committee to explain the hardships that would be imposed on the drain tile industry if the Treasury propositions are adopted. It was explained that the reduction of percentage depletion would adversely affect the capital programs of drain tile producers, who are trying to increase capacity of a vital industry under trying conditions.

Pipe Clay Requirements

The exceptional requirements of clays used in the sewer pipe industry were emphasized by M. R. Hardin, of W. S. Dickey Clay Mfg. Co., who appeared as chairman of the NCPMI depletion committee.

The total lack of economic justification of the Treasury position was brought out by Henry Burns, Jr., of Burns Brick Co. Burns said that since his mining costs have been reduced

Continued on page 100

INDUSTRY NEWS

Brick Plant Planned in Sumter, S. C.

Plans for establishment of a brick and tile plant at Sumter, S. C. by Eastern Brick & Tile Co. have been announced.

Cost of the plant will be approximately $500,000 and plans call for two tunnel kilns and six periodic kilns by 1961, for a total cost of $800,000.

Options on 76 acres of clay land in Sumter County and 56 acres of shale land outside the county have been obtained, according to L. C. Brooker Jr., company president.

GMcB 25c Div.

Directors of Gladding, McBean & Co. on March 25 declared the regular quarterly dividend of 25c per share on capital stock, payable April 24.

Philander Named Narco Sales Prom Mgr.

Herbert C. Philander has joined North American Refractories Co., Cleveland, Ohio, as Sales Promotion Manager. He was formerly with Illinois Clay Products Co.

Natco Opens Office In Houston

Natco Corp. has opened a district sales office, as of April 1, in the Old National Life Building in Houston, Tex. According to Pres. Roy Shipley, the office will serve Natco customers in a territory which includes Texas, Ariz., Okla., Ark., and southern New Mexico.

George F. Osten, formerly manager of the Louisiana sales area, has been named manager in Houston, Shipley notes that opening of the office marks the first Natco expansion of sales and service coverage into this area.

Davis-Re-Elected by Oak Hill

Myron Davis was re-elected president-general manager of Oak Hill (Ohio) Fire Brick Co. at the annual meeting held Feb. 28. Other officers elected include T. R. Davis, vice-president; Lew Hughes, secretary-treasurer; Willard Davis, assistant manager.

Washington Brick Builds New Plant on Site

A new brick plant immediately adjacent to the old plant at Muirkirk, Md. is under construction by Washington Brick Co., of Washington, D. C.

A new grinding system will be used, executive Vice President John Harding Jr. reports. A contract has been let to Harrop Ceramic Service for construction of a 356' long tunnel kiln and twin track dryer.

Production, Harding reports, will be in excess of 20 million brick a year. As soon as the new plant is complete the old one will be demolished. Most of the new buildings will be of tubular steel and sheet metal siding; the remainder of masonry.

Florida Solite Opens New Plant

Florida Solite Corp's. new plant at Green Cove Springs will open in April, according to an announcement by W. Glover Shumaker, manager of the new plant.

This will be the first Solite plant in Florida. Sales headquarters will be in Jacksonville with George Jones as area representative. Florida Solite is a wholly owned subdsidiary of Southern Lightweight Aggregate Corp.

Atkinson Heads Calif. Brick Assn.

Don Atkinson, of Los Angeles' Atkinson Brick Co., has been elected president of the Brick Institute of California.

NC Brick Use Nearly Doubles

Brick & Tile Service, Inc., reports that brick shipments in North Carolina during February were 88% ahead of the same month last year. Total shipments for the first two months of 1958 were 67% ahead of the same period last year. In terms of number of brick, this meant over 55 million units. The figures exclude shipments outside the state and refer only to NC consumption.

Marshall Brick Has Two Fires in Month

A second fire in less than a month completed destruction of a tunnel drier building damaged by an earlier fire at Marshall (Tex.) Brick Co. The second fire occured March 2.

The first fire destroyed 20 of the 30 drying tunnels with the second fire wiping out the remaining ten. Overall loss was estimated by Supt. Robert Geddy at about $30,000. The plant reportedly will not have to decrease production rates because of additional drying facilities that the plant has.

$2 Million Net Income For Green in 1958

Following the decline in steel and other durable industry, sales dropped at A. P. Green Fire Brick Co. to $34.1 million in 1958 from 1957's figure of $42.2 million, according to the Green annual report.

Net income in the last year was $2.1 million, equal to $2.16 a common share, compared to 1957 figures of $3.3 million or $3.55.

Porter MgO Plant Ships First Load

The first periclase grain shipment of 1,500 metric tons from H. K. Porter Co. Inc's. new sea water magnesia and basic refractories plant was shipped from Mobile, Ala. in late March.

The initial order is the first of several periclase grain orders booked for shipment from the new plant at Pascagoula, Miss. The plant goes into full, official production in April.

PC Plans Distribution Research

Plans to conduct an extensive survey of the marketing and distribution problems of building materials and equipment manufacturers has been announced by Producers' Council.

The council has retained Dr. Reavis Cox and Dr. Charles S. Goodman from the Wharton School of Finance and Commerce, Univ. of Penn., to make the study.

Judges Named For Ceramic Award

John D. Clark, chairman of the Nat'l. Inst. of Ceramic Engineers PACE award committee, has announced that judges to select the recipients of the NICE first annual award for professional achievement will be C. W. Planje, Frank H. Riddle and Dr. Louis Navias. Presentation of the award will be at the ASC meeting in Chicago on May 17.

Builders Promotes Desert Rose

The wonderful ability of brick to form a decorative background is being emphasized in a current advertising series by Builders Brick Co. of Seattle. In the painted bulletin illustrated, "Desert Rose," the company's newest buff-red shade, is featured. High style art emphasizes the contemporary qualities of brick as a decorative material.

The same "color" story is being carried in front page newspaper ads in the Seattle papers. According to R. C. Houlahan, Builders Brick's president, the decorator story of brick should benefit the entire brick industry in the Northwest by informing the public that, like the paint industry, brick is keeping pace with the changing trends in decorator demands.

60,000 Brick In Serpentine Wall

This serpentine wall, with 60,000 variegated rose color norman ruffle face brick, rock faces prepaved, enhances the beauty of the $9.2 million Los Angeles County Osteopathic Hospital. Brick Institute of California notes that the popularity of similar "sinuous enclosures" is increasing in both residential and institutional construction.

INDUSTRY NEWS

Hydraulic Press Nets $2.09 Per Share in '58

Hydraulic Press Brick Co. reported net earnings of $624,155, equivalent to $2.09 a common share, as compared to 1957 earnings of $621,334 or $2.08.

Sales were 7% over 1957, with the 1958 total at $6.7 million, as compared to $6.2 million.

Mexico 1958 Net Income at $1,711,485

A preliminary, unaudited report for 1958 shows that Mexico Refractories Co. had net income of $1.7 million, or $1.99 per share as compared to $2.4 million and $2.90 in 1957.

Net sales in 1958 were $16.9 million and in 1957 were $20.9 million.

More than $1 million was expended during the year for modernization, improvement and cost reduction. The third largest profits of any quarter in the company history came in the fourth quarter, Board Chairman J. B. Arthur reported.

Large Pipe Joints Introduced by GMcB

A new Speed-Seal joint, designed for use in all large (15" through 42") diameter pipe, has been introduced by Gladding McBean & Co. The joint is reported to be the first such joint available on the West Coast in large size pipe.

In the photo, witnessing a demonstration of load resistance, are Emerson B. Milnor of Boyle Engineering; Gordon Magnuson, of Gladding, McBean; Paul Hennessey, public works director of Laguna Beach; Edwin Finster and Conrad Hohner Jr. of Boyle.

Hamilton Press Brick Has Best Year Yet

"A banner year" was the description of 1958 for Hamilton Pressed Brick Co., of Hamilton, Ont. W. K. Zinszer, managing director, reports that this year was the largest business year to date, with 12 million brick manufactured and sold. Products made are face brick, extruded and pressed, of varying colors and textures.

All brick are now packed in 500 cubes, Zinszer notes, and unloaded by "self unloader on the job."

Doug Whitlock II Named MR Assistant

Douglas Whitlock II has been appointed assistant to the Director of Mason Relations of SCPI.

Ayer-McCarel Buys Brazil Clay Plant

Ayer-McCarel Clay Co., of Carbon, Ind., has purchased all physical assets of Plant #2 of Brazil Clay Co., Inc. The Ayer-McCarel plant was destroyed by fire on Feb. 19. This plant is now being rebuilt.

Banker Buys Control Of Buffalo Brick

Gerard E. Murray, a Buffalo banker, announced he has purchased control of the Buffalo Brick Corp.

Murray said "one of the main things I expect to do right away" is modernize the brickmaking operations at a cost of between $50,000 and $100,000. The Buffalo Brick Plant is southeast of Orchard Park, N. Y.

The Buffalo Brick business was purchased from Stephen B. Elggren, who is now sales manager of the Bell Aircraft's Niagara Frontier Division. The purchase price was not disclosed.

Murray will be president and treasurer of Buffalo Brick and Robert Hawkins will be vice president. Hawkins was vice president under the previous ownership..

Plans call for a group of Buffalo businessmen to share a minority interest in Buffalo Brick, but Murray said he and his wife will hold more than 50% of the stock.

Murray said the brick business appears to him to have a "great potential" because of the effect redevelopment programs will have on new construction. The modernization he is planning for Buffalo Brick is aimed at increasing its plant efficiency and capacity and diversifying its brick products.

He pointed out that the plant normally operates only about nine months of the year and at less than capacity even then.

UBT Moves Office

United Brick & Tile Co. has announced re-location of their Kansas City general offices and display rooms to 2300 McGee Trafficway, with a mailing address of Box 617, Kansas City 41.

Grefco Earnings Sales Drop

Net income fell to $3.5 million, or $2.59 per share, from $7.7 million or $5.58 per share, according to the 1958 annual report of General Refractories Co.

Sales in 1958 were $49.3 million as compared to the previous year's $67.6 million.

Pres. L. Y. Greene reported that a large part of capital spending during 1958 went for expansion of facilities at Gary, Ind., and at Baltimore.

Remmey Appoints Breit Chief Sales Engineer

Richard C. Remmey Son Co. has announced the appointment of Karl K. Breit as chief sales engineer. Remmey, in Philadelphia, is a subsidiary of A. P. Green Fire Brick Co.

Prior to his Remmey appointment, Breit was in the Green sales engineering department.

PacClay Declares 25% Stock Dividend

The board of directors of Pacific Clay Products on March 19 declared a 25% stock dividend on the capital stock, payable April 21, Pres. John D. Fredericks has announced.

Fredericks said the board had also stated its intention, subject to future earnings and financial condition, to continue payment of the regular quarterly cash dividend of 30c a share on the increased number of shares outstanding after payment of the 25% stock dividend.

Currently, there are 516,530 shares of capital stock outstanding.

For 1958, PacClay reported sales of $10.1 million, compared with $8.8 million in 1957. At the meeting, all board members were re-elected.

D. McPhail Dies

Daniel McPhail, 65, part owner of American Clay Products Co. at Tiffin, Tex., died March 10 at his home in Sebring.

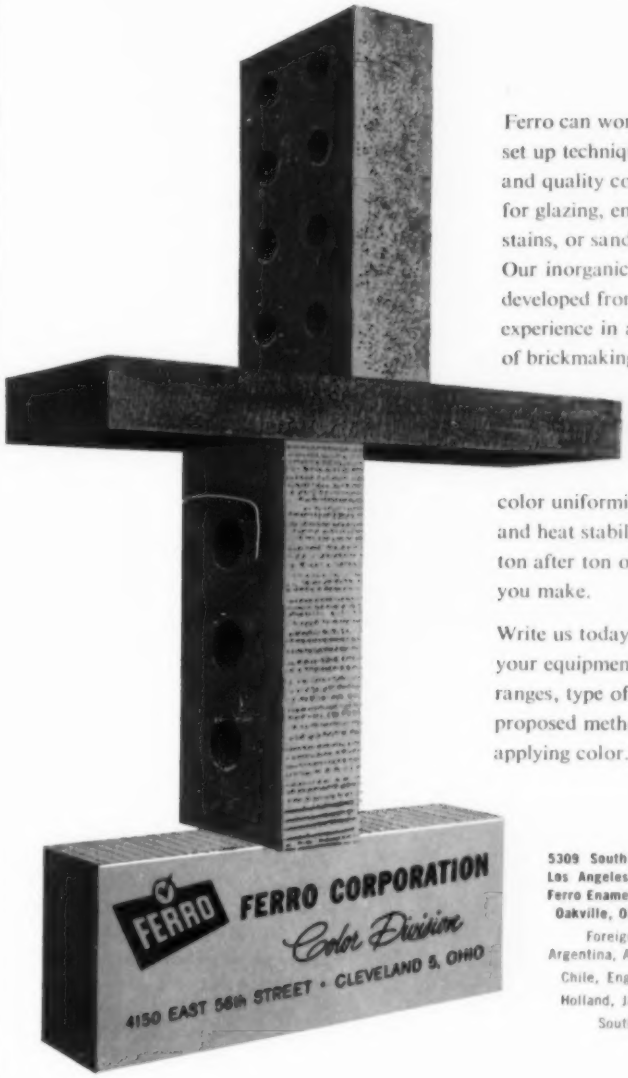
Larson Named CFLI Secretary

Robert F. Larson, Natco assistant general sales manager, has been named secretary of CFLI. He succeeds Earl Roberts of Straitsville Brick Co., who resigned.

Clay Processing Plant Planned in Idaho

J. R. Simplot Co. has announced plans for a $1 million clay processing plant at Boville, in north Idaho. The plant will process ceramic clays and separate silica from the clay.

When you color Brick...



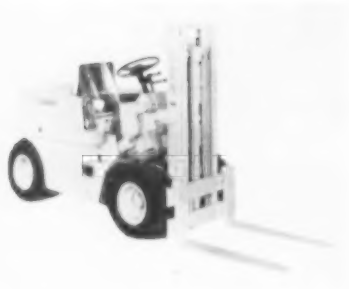
Ferro can work with you to set up techniques, processes and quality controls . . . for glazing, engobe, body stains, or sandblasting. Our inorganic colors — developed from long experience in all kinds of brickmaking — retain color uniformity and light and heat stability through ton after ton of the brick you make.

Write us today, describing your equipment, firing ranges, type of clay and proposed method of applying color.

5309 South District Blvd., Los Angeles 22, California.
Ferro Enamels (Canada) Ltd., Oakville, Ontario, Canada.

Foreign plants in Argentina, Australia, Brazil, Chile, England, France, Holland, Japan, Mexico, South Africa.

PRODUCT NEWS

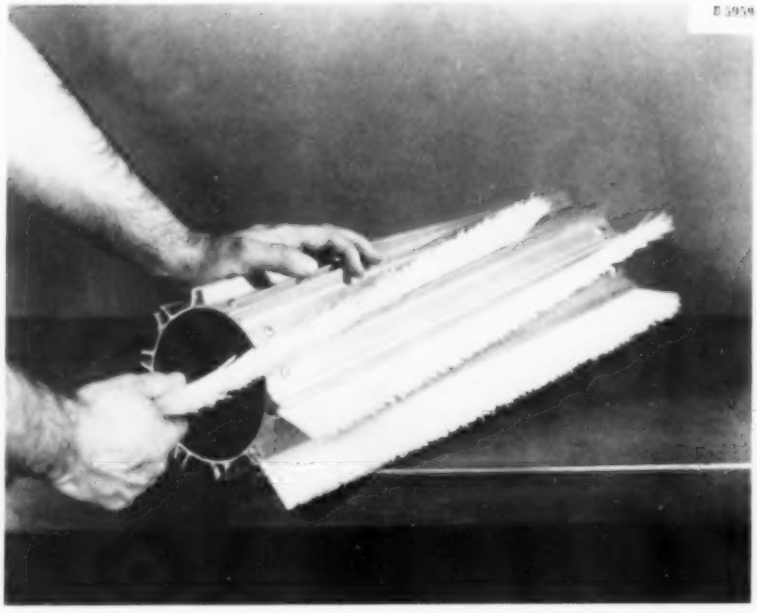


Outdoor Fork Truck

A pneumatic tired fork-lift truck of 5,000 lbs. capacity designed for outdoor use over rough terrain has been added to the Clarklift line. Called the CY-50, the unit features a two speed, power shift transmission with a manually controlled creeper gear; turning radius of 133-1½", power steering, swing-out hood for accessibility to the engine. Four drive tire arrangements are available.

Clark Equipment Co.

292/Circle on Reader's Service Coupon

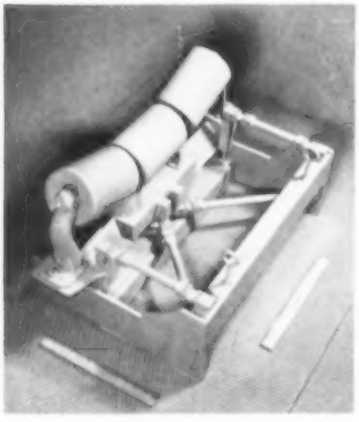


Conveyor Cleaners

A low cost brush has been developed for use in cleaning the carryback from conveyor belting. The brush material, Korfil P, is a synthetic material said to have long life, to not absorb moisture, to not soften or to become brittle at low temperatures. The brush is said to remove 80 to 100% of carryback material; is self cleaning. An extruded aluminum mounting is used to hold the individual strip brushes, allowing easy on-the-job replacement.

Osborn Mfg. Co.

294/Circle on Reader's Service Coupon



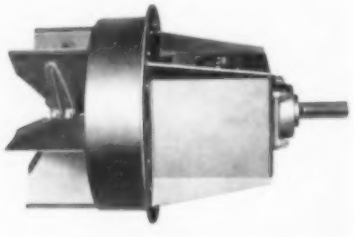
Conveyor Scale

A continuously totalizing scale is being made that can be mounted between strands of any standard flat or troughed belt conveyor from 14 to 72" in width. The scale uses an electrical transducer to convert load weight in proportional voltages for weight check. Accuracy is said to be high.

Bell Automation Corp.

293/Circle on Reader's Service Coupon

Thermal-Aire Fans



A new radial blade series of high temperature fans—RF Thermal-Aire—has been introduced by Garden City. The equipment is designed for service at temperatures to 1350° F. with models in two basic types of construction: RF Thermal-Aire fans and RF Thermal-Aire plug units. Fans are available with uninsulated or insulated housing; gas tight and corrosion resistant construction can be furnished.

Garden City Fan Co.

295/Circle on Reader's Service Coupon

Kiln Gun Shell

A kiln gun shell, for particular use in short kilns, is being made now by Ramset. The shell has been designed for use in kilns of 150' or less, but can be used in longer kilns for balls and relatively soft rings. Price is the same as the conventional shell; also 8 gauge, loaded with solid 3 ounce lead slugs.

Ramset Fastening System, Olin Mathieson Chemical Corp.

296/Circle on Reader's Service Coupon

Blasting Book

AGC has published what's said to be the first uniform record book for blasting operations in construction. The log provides a permanent record of each blasting operation. Records include such information as type of formation blasted, depth of charge holes, type and quantity of explosives, number and type of delays used, weather conditions, geographic location and time. Sells for 20¢ each; $2.25 for a dozen copies.

Associated General Contractors of America.

297/Circle on Reader's Service Coupon

Batchplugs

Howe has developed a new plug-in unit to control proportions of batches. Each formula, to simplify things, is set by screw adjustments in one of the Batchplugs. Insertion of the Batchplug automatically then provides the formula mix desired. Said to completely eliminate the human error possible in manual batch formulation; to keep formulas private. Each Batchplug is a self-contained formula, which provides complete pre-set control for up to 10 ingredients per formula. Each plug has a nameplate for easy identification.

Howe Scale Co.

298/Circle on Reader's Service Coupon

Lo-Headroom Hoist

Extremely low headroom, as little as 24", is needed for a new line of F3 electric hoists available in capacities from 1½ through 7½ tons. Motor and control box are totally enclosed and weathertight; with a diaphragm added, unit can be used outdoors.

Robbins & Myers, Inc., Hoist & Crane Div.

299/Circle on Reader's Service Coupon

Tractoloader

The new TL-14 Tractoloader is a unit weighing 14,430 lbs., with a carry capacity of 5300 lbs., maximum lifting capacity of 11,000 lbs., and breakout force of up to 17,800 lbs., according to the manufacturer. Six buckets are available, from 1 to 3 cu. yds. Top travel speed is 26 mph in either direction; rear wheel power steering, four wheel power brakes.

Tractomotive Corp.

300/Circle on Reader's Service Coupon

Work Bull

Said to incorporate many features found only on big tractors, the new Work Bull 204 features three-point foot acceleration and instant no-shift change of direction, according to M-F. Speeds up to 6 mph, with four speed transmission with Hi-Lo range.

Massey-Ferguson Industrial Div.

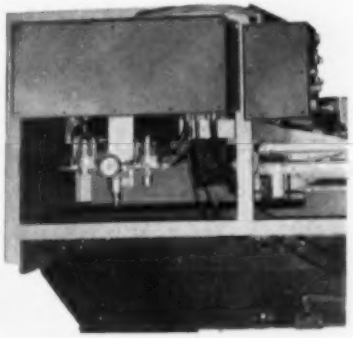
301/Circle on Reader's Service Coupon

Pipe Handling Fork

Pipe handling is simplified and damage reduced through the use of Model 120 Load-Grab Clamps equipped with slip-on swivel pads, according to Hyster. Pipe can be handled in either vertical or horizontal position; the swivel pads eliminate damage during tipping. The pads can be removed and a third arm installed for transporting pipe three at a time.

Hyster Co.

302/Circle on Reader's Service Coupon

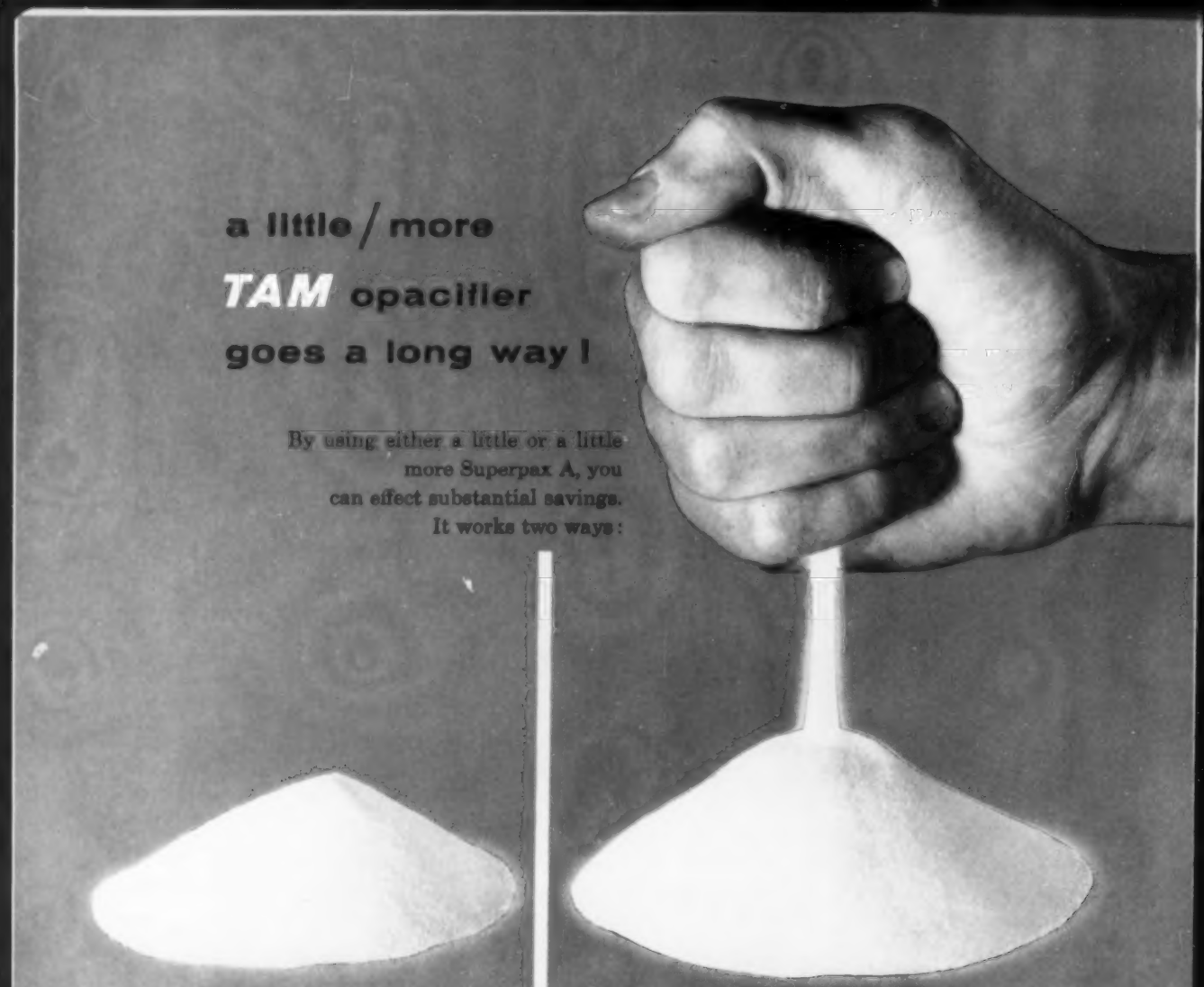


Scale Gross Weigher

A new Thayer gross weigher has been designed to discharge directly into a container. The belt feeder used, with air actuated bulk and dribble gates, permits adjustable flow, is particularly suitable where material can't be hoppered. Feeder and scale are totally enclosed; control box can be mounted remotely.

Thayer Scale Corp.

303/Circle on Reader's Service Coupon



a little / more *TAM* opacifier goes a long way!

By using either a little or a little more Superpax A, you can effect substantial savings. It works two ways:

a little . . .

Using a lesser amount of Superpax A, you can obtain opacity equal to that of other brands. This means that your actual cost for Superpax A can be considerably lower than that for ordinary opacifiers.

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By using the extra hiding power of up to 50% more TAM opacifier than normal, it is often possible to reduce rejects by as much as 20%. This saving far exceeds the cost of the additional opacifier used.

IN EITHER CASE... you'll find it economical to use TAM opacifiers. Write our NYC office for detailed information on the complete line, try a sample run under your own conditions and take advantage of the cooperative service provided by our Ceramic Engineers in the field or laboratory.

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M. P. Schneider Sr. Dies

Matthew P. Schneider, 68, co-owner of Slidell (La.) Brick & Tile Co and St. Joe Brick Works, died March 19. He entered brick manufacturing with his father at the St. Joe plant near Slidell. He purchased the Slidell plant from a lumber company in 1930.

Natco 1958 Sales of $16 Million

Net sales during 1958 were $16.1 million for Natco Corp., as compared with the 1957 level of $16.6 million, according to their annual report.

Net income for the year was $615,000 or 36c per share as compared to 1957's $1.1 million or $1.60. In the message to stockholders, Pres. Roy Shipley pointed out that 1957 earnings included some $93,000 from non-recurring income of $205,116, after giving effect to income taxes.

Industrial Waste Meet At Purdue May-5-7

The 14th Purdue Industrial Waste Conference will be held May 5-7 at Purdue Memorial Union Bldg., Lafayette, Ind., according to an announcement by Don E. Bloodgood, professor of sanitary engineering.

Approximately 50 papers will be presented. Registration blanks will be mailed on request.

W. H. Crangle Dies

William H. Crangle, president and general manager of Cleveland Builders Supply Co., died March 9 at the age of 67, following a long illness.

From 1928 till 1933, he was president of Metropolitan Concrete Co., a firm absorbed by Cleveland Builders in 1933. It was in 1953 that he was appointed president of Cleveland Builders.

Ray Conover Leaves Gladding, McBean

Ray C. Conover, former pipe products division vice president, has resigned from Gladding, McBean & Co. Conover has not yet announced his new affiliation.

At Gladding, McBean Conover had been in both the pipe and refractories divisions.

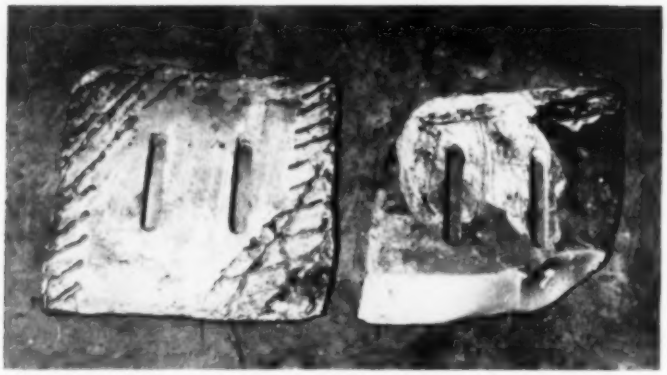
Logan Clay Men Meet To Plan Sales Efforts

Logan Clay Products Co. recently was host to sales representatives and officials for a two day conference in Logan, Ohio, on advertising, promotion, product research and sales plans for 1959. Sales personnel of Graff-Kittanning Clay Products, a new Logan division, also attended.

Those shown are, seated from l to r, Charles Miller, James Nugent Jr., Howard White, James Collins, Wilfred Kitchen, John L. Williamson. Standing, William Brooker, Jack McGuire, Robert Robb, Tom Nugent, Jack Frantz, Bill Baird, William Devlin, H. Clair Pee, Paul Galvin, Paul Dabney, Richard H. Holl.

U of I Grad Lesar Returns, Joins Keramos

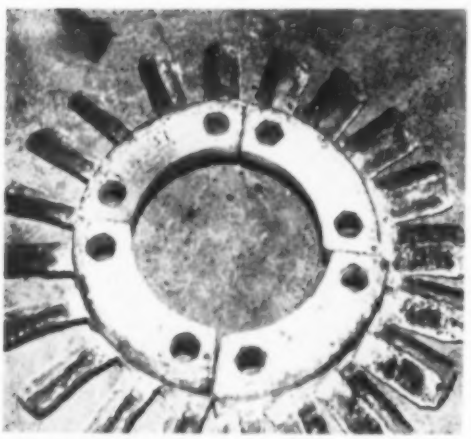
Albert R. Lesar (left) research engineering manager for A. P. Green Fire Brick Co. is greeted here by Charles A. Hill, president of the Univ. of Illinois Keramos chapter when Lesar returned to the U of I to be initiated into the organization. he graduated in 1937. Second from left is Prof. A. I. Andrews, ceramic engineering department head, and Prof. James A. Nelson, Keramos chapter adviser.



MULLER PLOWS—*Note how Tube Borium (left) has retained corners and size under severe abrasive action.*

"What... **TUBE BORIUM*** *cheap at $5.00 per pound?"*

AUGER PADDLES
Tube Borium keeps paddles out to size, improves auger efficiency in moving wet clay.



SHREDDER KNIVES—*A small deposit of Electric Tube Borium keeps knife edges sharp and straight.*

TUBE BORIUM is pure Tungsten carbide particles encased in mild steel tubes. Abrading surfaces protected with Tube Borium slide on a layer of tungsten carbide, the most wear resistant metal known. Available in a wide range of mesh sizes for acetylene or arc application; also in wires for automatic and semi-automatic electric welding machines.

Some people buy hard-facing metals strictly on price. Real economy is measured—not in first cost—but in results. That's why TUBE BORIUM is cheap at almost any price. TUBE BORIUM virtually defies wear. It not only outlasts all other hard-facing alloy types on applications involving straight abrasion but eliminates downtime usually required for maintenance. With negligible downtime valuable production is saved. In addition to lower cost of operation you'll notice all equipment produces at a higher rate because parts keep original size longer, retain operating efficiency!

One of your biggest investments in any hard-facing program is not the alloy used but the welding time expended. It takes no longer to apply the best alloy than the cheapest—but results are beyond compare. Next time try Stoody TUBE BORIUM. In the long run, you'll find it more economical—even at $5.00 per pound!

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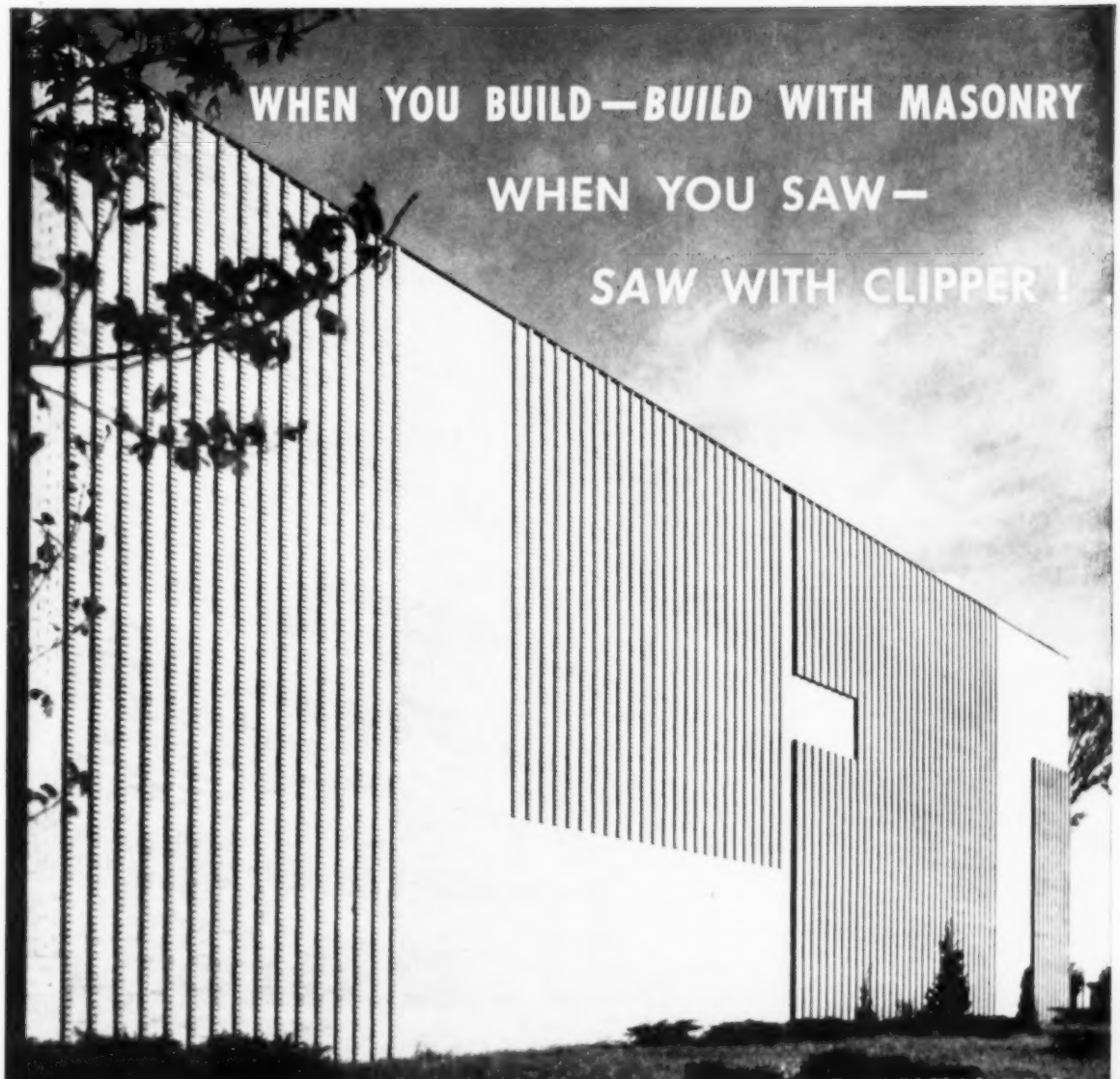

Temple B'nai Jehudah Kansas City, Mo. Architects, Kivett & Myers & McCallum received special AIA awards for outstanding brick design. Masonry by V. S. DiCarlo Construction Co.

There's a close family resemblance between . . .
MASONRY CONSTRUCTION and CLIPPER MASONRY SAWS. Both are . . .

- Highest Quality Obtainable
- Most Durable You Can Use
- Most Attractive in Price and Appearance
- Most Versatile for Any Construction

No wonder Masonry Construction and Clipper Masonry Saws have done more to add Beauty, Permanence and Economy to residential and building construction the world over.

Clipper "SAWS RIGHT THRU"

113X

MANUFACTURING COMPANY

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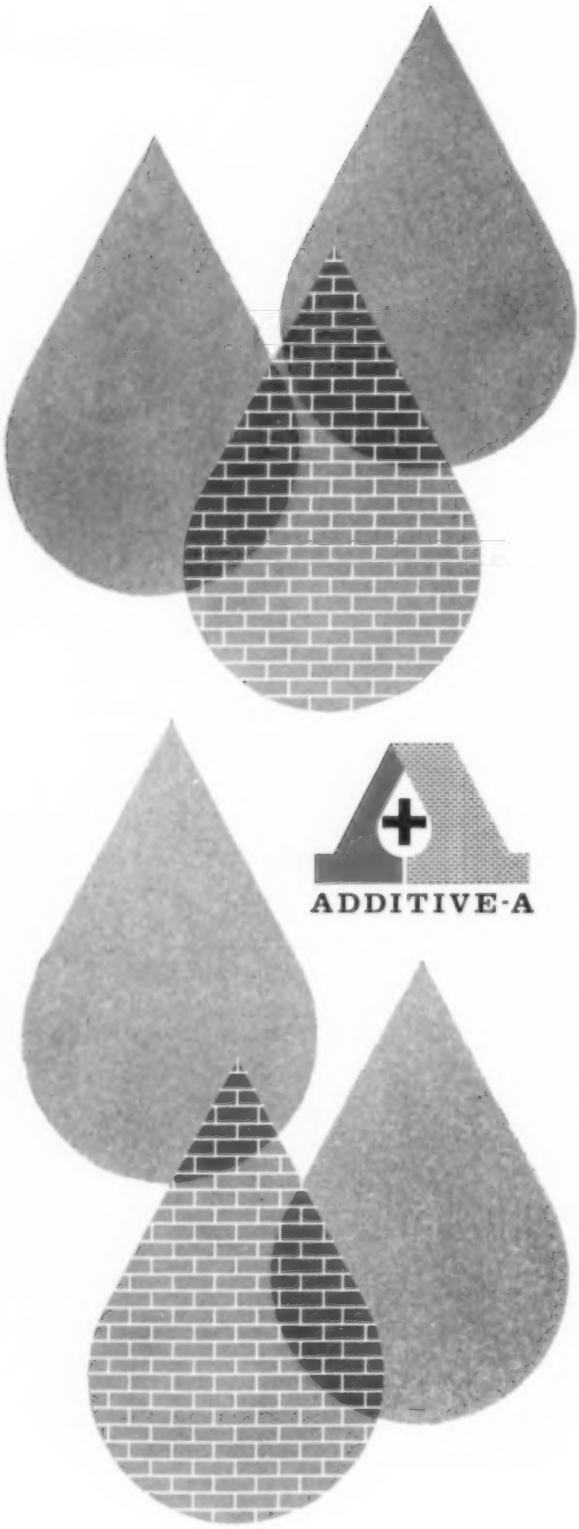
2815 WARWICK — VICTOR 2-3113 — KANSAS CITY 8, MISSOURI
FACTORIES IN ENGLAND — FRANCE — GERMANY — ITALY



For even temper... better textures add **Additive-A*** clay conditioner

ADDITIVE-A

Right at the start . . . at the pug mill . . . you can assure better brick production by adding Additive-A, a product of Kimberly-Clark Corporation. For here is where this hard-working clay conditioner helps most to produce more even temper, to smooth out your production rate and to reduce variation in textures.

Extra benefits of Additive-A are:

- Increases green plastic strength
- Improves clay workability
- Upgrades the quality of all ware
- Aids water penetration
- Increases dry green strength
- Cuts dryer loss
- Controls scumming

ADDITIVE-A is a trademark of KIMBERLY-CLARK CORP.
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Write for descriptive folder, to: **Kimberly-Clark Corporation** • **NEENAH, WISCONSIN**
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IF **YOU** WANT TO CUT **YOUR** DELIVERY COSTS

SUPERLITE UNLOADERS

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If you want
MORE DELIVERIES — FASTER AND CHEAPER
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ADDRESS .....
CITY ..... STATE .....

"PYRAX" PYROPHYLLITE

FOR REFRACTORIES

Three special grades of "PYRAX" pyrophyllite have been developed for use in refractories.

Refractory grades of "PYRAX" pyrophyllite can be used to good advantage in refractory brick, refractory cements, unfired refractories, backwalls, radiants, tile setters, saggers, and other special refractories.

"PYRAX" pyrophyllite has a P.C.E. of cone 26 to 27 and when mixed with small amounts of kyanite its P.C.E. can be increased to cone 28 or 29.

"PYRAX" pyrophyllite refractories when properly compounded have a high strength, will not spall or fail due to temperature gradient.

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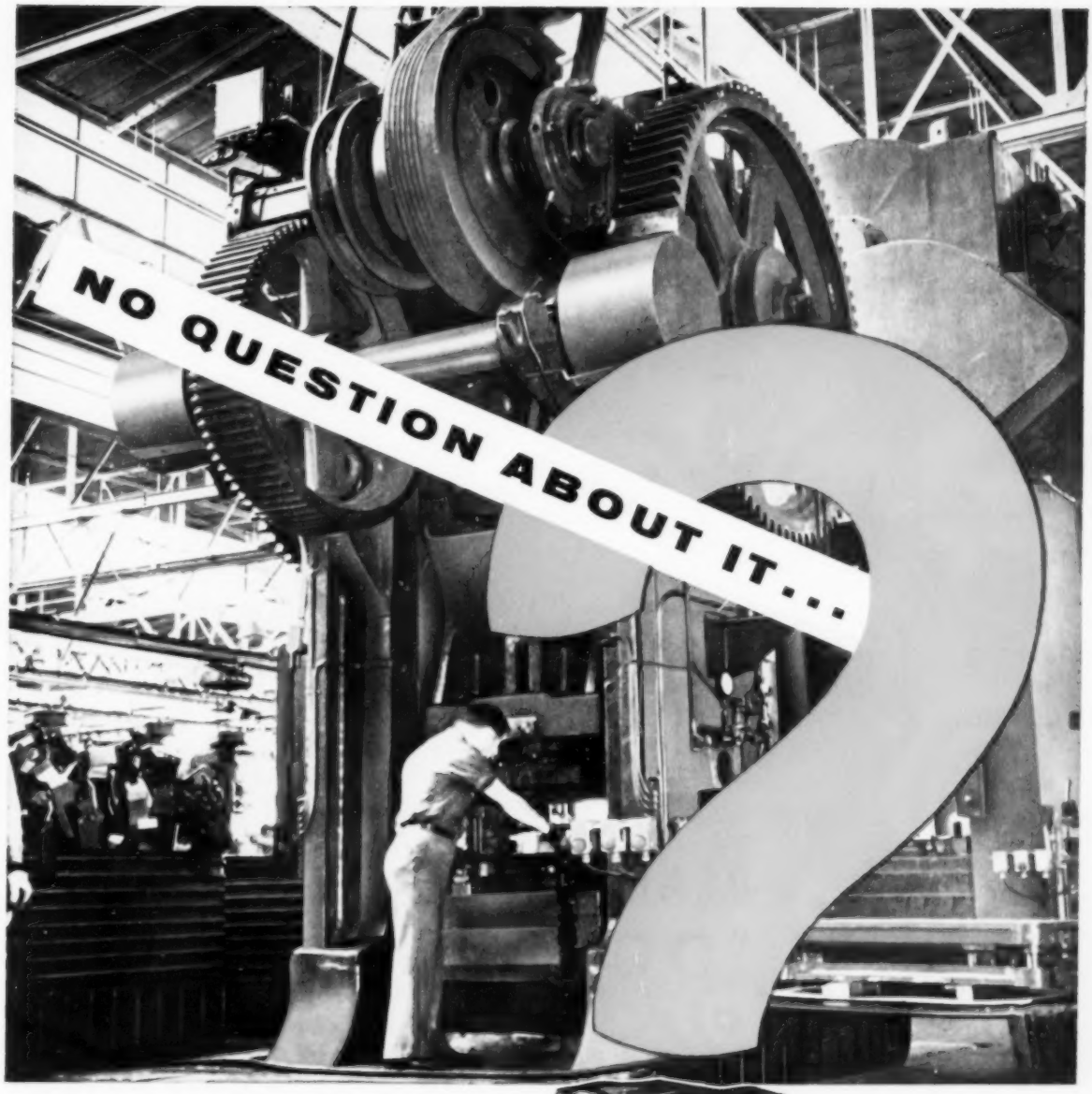

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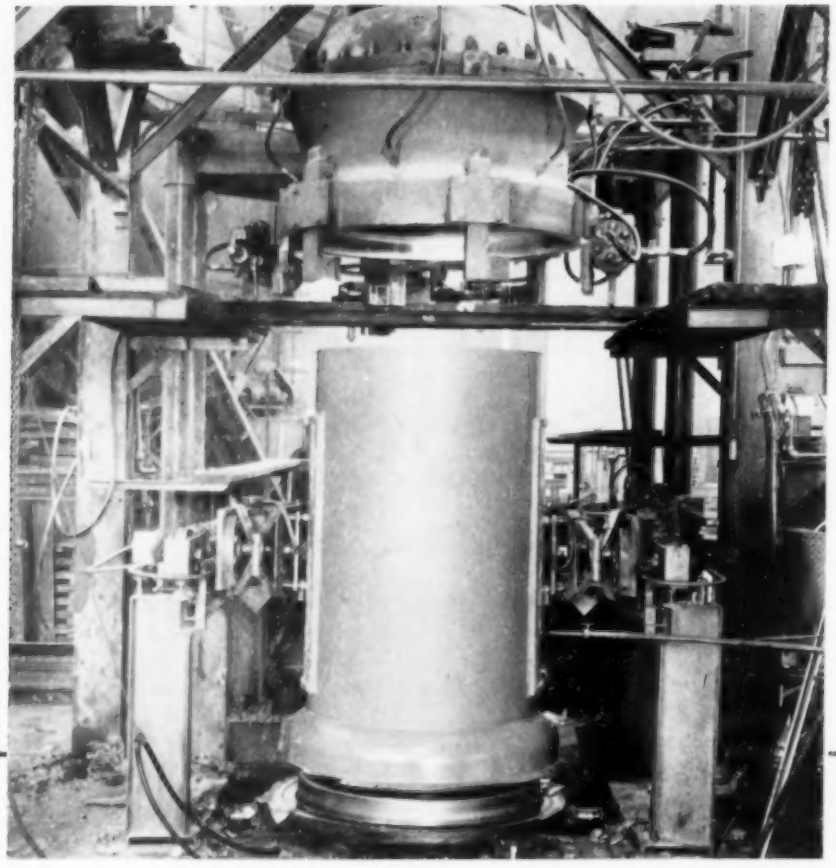
BITUMINOUS COALS FOR EVERY PURPOSE

Ask our man! BALTIMORE & OHIO RAILROAD, BALTIMORE 1, MD., Phone: LExington 9-0400



PEARNE & LACY "OCTOPUS"

Automatic Handling and Finishing Machine for Large Pipe

Large pipe 15" and up, extruded from a vertical press, are removed from the press, bell and socket . . . finished and placed on pallets . . . automatically by the Pearne & Lacy "Octopus." The press man who controls the press is the only person required in this operation. There is no loss in production; when settings rings are required they can be cut and held in place while the pipe is being turned and placed on the pallet. No socket boards are required.

More details are in our catalog. Ask for your copy.

Engineers and Manufacturers of Automatic Handling and Finishing Equipment for the Ceramic industry.

P. O. Box 3366, Terminal Annex
Los Angeles 54, California **Telephone: CU 3-1268**

PEARNE AND LACY INC. MACHINE COMPANY

A New Concept In Kiln Design

A new 165 ft., Ohio Kiln Clipper Kiln at H. C. Sipple Brick Co., Stanton, Ky. producing 23,000 bricks/day with a gas consumption of only 4,000 cu. ft./hr.

The ideal way to expand plant production . . . or modernize facilities!

FAST • EFFICIENT • LOW COST • CLIPPER

Here's What It Will Do For You . . .

- **Fire from 10,000 to 25,000 bricks/day depending on the clays you use, the capacity you need.**
- **Require a minimum of plant changeover — you don't have to build a new plant, or completely rebuild your old one.**
- **Provide you with all the advantages of tunnel kiln firing — at a cost that even the smallest plant can afford.**
- **Clipper kilns can be built for ¼ to ⅓ the cost of conventional tunnel kilns.**

OHIO KILNS
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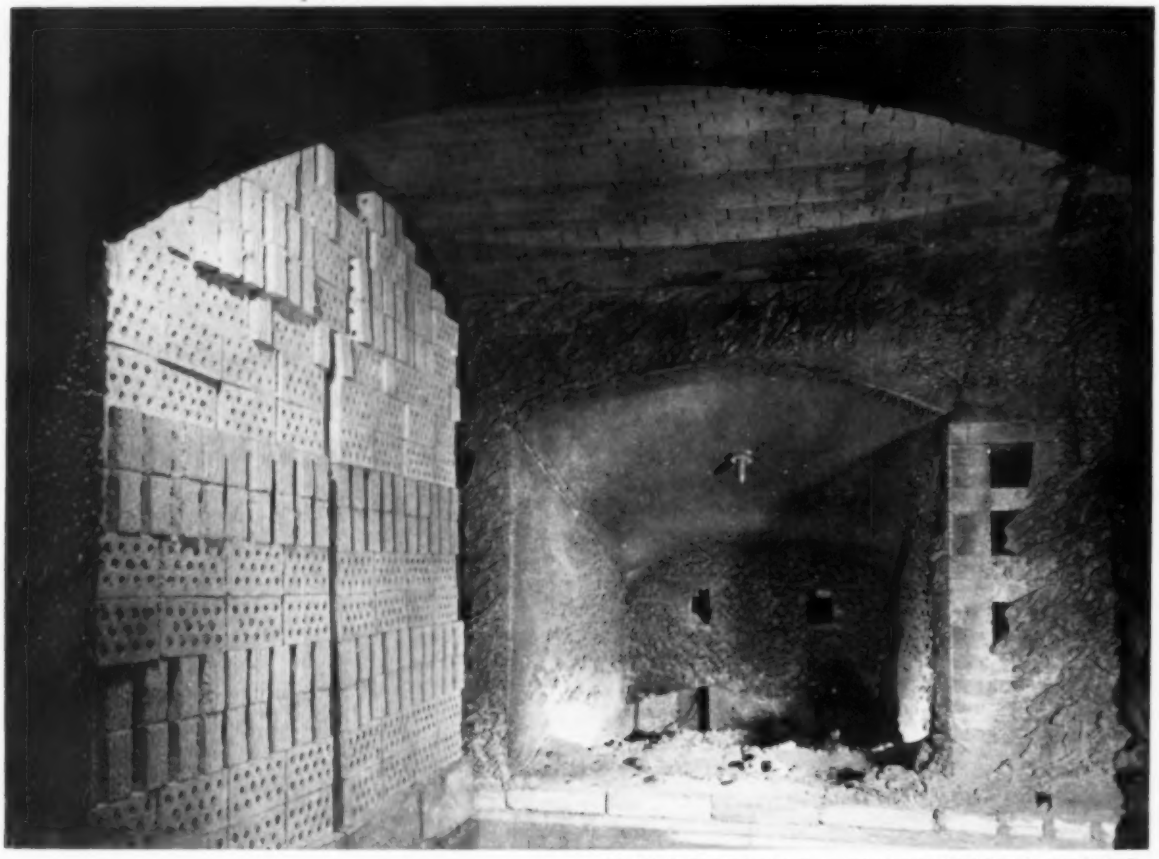
Check for yourself . . . write or call today!

3 Years Service:

No sign of corrosion in refractory concrete firebox arch made with **Atlas Lumnite Cement**



One of 20 firebox arches in Harrop coal-fired tunnel kiln, Fenati Brick Co., New Castle, Pa.

Long, trouble-free service is commonplace for arches of refractory concrete made with Lumnite calcium-aluminate cement and suitable aggregates. Notice the arch above. There is no sign of corrosive attack by the materials used in flashing the ware – and the smooth, jointless surface is free from deposits of fly ash. Monolithic refractory concrete construction eliminates the need of repairing or replacing sagging arches. Concrete is placed easily and quickly with plant labor. Arches can be cast in place or precast in any shape or size. Concrete reaches service strength in 24 hours.

For convenience, leading manufacturers of refractories offer castables bonded with Lumnite cement – packaged mixtures ready for use with just the addition of water. For more information, write Universal Atlas, 100 Park Ave., New York 17, N. Y.

"USS", "Atlas" and "Lumnite" are registered trademarks L-185

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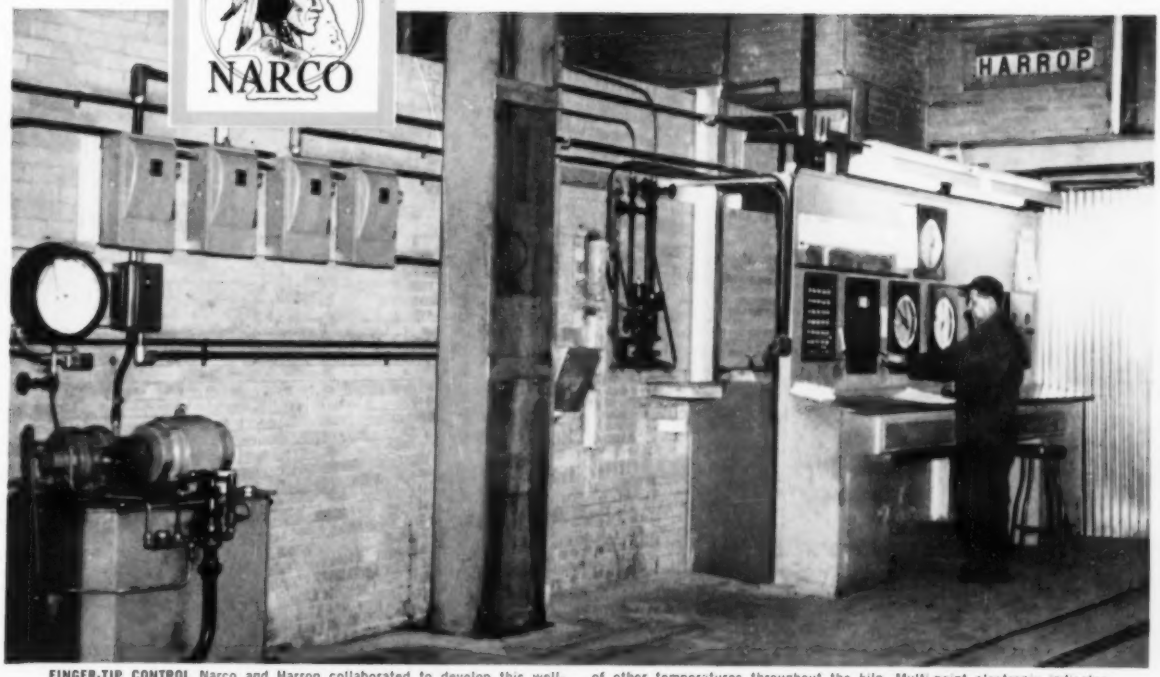


FINGER-TIP CONTROL Narco and Harrop collaborated to develop this well-organized layout of control panel for new Harrop kiln at North American Refractories Co. plant, Curwensville, Pa. With 2-zone automatic, full-proportioning control chart-recorded, operator also takes hourly readings of other temperatures throughout the kiln. Multi-point electronic indicator brings all thermocouple leads to one convenient, easily accessible location. Air motor operates automatically controlled damper in exhaust. Together with air-lock, this maintains constant draft conditions throughout kiln.

NARCO's new HARROP KILN fires up to 40,800 9" equivalents daily with stubborn Penna. clays

Pennsylvania clays are tough to fire. High carbon and sulphur content make oxidization difficult. Yet Narco's two Harrop kilns at Curwensville produce a high-quality line of refractories from these stubborn clays. Production includes dry press, stiff mud repress and hand-made shapes.

Narco's first Harrop installation, completed in 1953, consisted of a 172' dryer and a 393' kiln. To keep up with sales demand that far exceeded initial expectations and outgrew capacity, Narco again turned to Harrop for their present, enlarged facilities. Harrop doubled the size of the existing dryer to 344'. This gives plenty of dryer capacity to serve the original kiln **plus** an additional Harrop kiln, 476' long, which fires up to Orton cone 18. This new kiln produces up to 40,800 9" equivalents in 24 hours, despite the hard-to-oxidize clays. At this production level, design capacity is exceeded by 36%.

For the dryer, kiln or plant design to give you efficient, profitable production, consult Harrop. Our 37 years of proven engineering and construction experience is available to help you plan your new installation, without obligation.

HARROP DRYER gives easy control of temperature and humidity during the various stages of the cycle, to dry special shapes such as the rotary kiln shapes shown being discharged from the dryer.

ON THE WAY- Mixed setting of brick and shapes enters charging end of new Harrop kiln. Note hydraulic pumping unit for pusher at right. Natural gas is now being used with oil standby, for firing up to Orton cone 18.

READY FOR STOCK- Refractory brick and shapes leave open-end kiln in continuous motion. Because of efficient, profitable performance of both Harrop installations at Curwensville plant, Narco has new Harrop-designed facilities in operation in its new Farber, Mo. plant.

HARROP

TUNNEL KILNS • DRYERS • PLANT DESIGN

Harrop Ceramic Service Co.

35 EAST GAY STREET, COLUMBUS 15, OHIO

British Associate: British Ceramic Service Co., Ltd., Bricesco House, Stoke-on-Trent, England
Harrop Electric Furnace Division, 3470 E. Fifth Ave., Columbus 19, Ohio . . . Laboratory, Industrial and School Furnaces

HARROP . . .
Practical Ceramic Engineering, Put Profitably to Work

4

YOU'LL GET 4 TIMES THE PRODUCTION FROM THE SAME MAN-HOURS WITH

THE SMITH TURBINE-TYPE MIXER

Here's the way to increase production of refractories mix without increasing either man-hours or space!

The Smith Turbine Mixer is a high-speed, compact, low-headroom mixer that has proved ideal for mixing all kinds of refractories: wet, dry press, fused, heavy clay, even lightweight.

Results show that mixing time is four times faster than with other mixers — sometimes even more! Blending is desirably uniform . . . there's no segregation or particle breakdown of friable materials . . . coating, where desired, is fast, but balling is minimized.

The Turbine is low and vibrationless — doesn't need a costly supporting structure or base. It's the ideal way to squeeze maximum production out of valuable space.

Interested? Test data is available . . . or if you're hard to convince, we'll cooperate on a test program right in your own plant! Just call your Smith distributor, or write direct for fast action on this money-saving mixer.

A9-4076

SMITH

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

THE T. L. SMITH COMPANY Milwaukee 1, Wisconsin • Lufkin, Texas

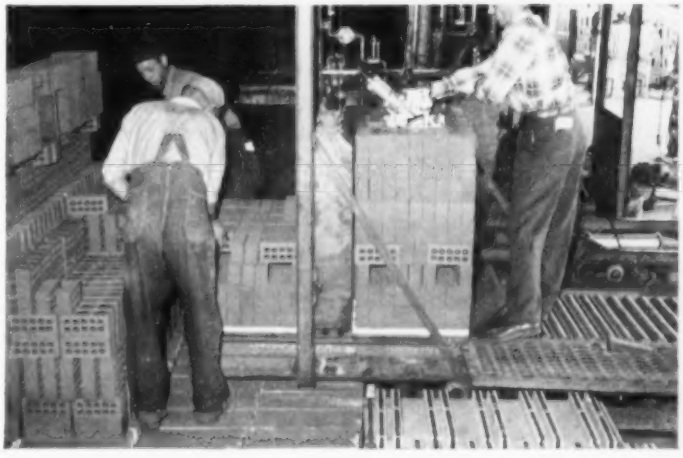
Affiliated with Essick Manufacturing Company, Los Angeles, Calif.

BRICK ARE STACKED AND BLENDED DIRECTLY FROM KILN CAR IN SELF-UNITIZED PACKS

Stacking patterns and pack sizes were designed for pack-haulers and Superlite trucks.

PACKAGE IS STRAPPED WHILE NEXT ONE IS STACKED

First package has been moved by air power under power elevated gate and is being strapped. Strapping station side of gate has 5 strap chutes. Stacking side of gate is smooth. A powered depressible package stop at strapper's feet keeps bricks in perfect alignment.



Up to 75,000 brick packaged per day by 5 men

Equipment investment less than $1,000

This is one way to package brick. It's a good way because it is saving time and money every working day. It was developed in full detail for a major manufacturer by a Signode man who observed, considered, and *worked* with the customer. It may not be best for your set-up. But the experience and ingenuity of a Signode man, plus the hand, power, and automatic tools and machines available to him can almost certainly save you a good deal of money in your packaging operation. The Signode man near you will be glad to make the necessary arrangements. Call him today, or write:

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First in steel strapping

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FIVE days' time completed the SWISS-LOK structural frame for this 54,300 sq. ft. building for Logan Clay Products Co. at Logan, Ohio.

ONE crane was the sole erection equipment required for this building structure for Davis Firebrick Company at Jackson, Ohio. Crane service was required but one-third the time of conventional erection because of fast SWISS-LOK connections.

Corrugated aluminized steel sheeting was selected by Davis Firebrick Company for this building at Oak Hill, Ohio. Any type of sheeting desired is applicable to SWISS-LOK structures.

Brick and Clay Products Companies get lower cost, faster building construction with SWISS-LOK Tubular Building Frames

LOWER COST BECAUSE:

Tubular members save ⅓ steel weight without loss of structural strength
⅓ less shipping weight
Greatly reduced crane service (no other equipment needed)
Greatly reduced erection labor hours

FASTER BECAUSE:

No welding, cutting, bolting or riveting at the site
All parts pre-fitted for quick assembly and locking
All frame members can be shipped by fast motor freight

BETTER BECAUSE:

Swiss-Lok building frames do not depend on roofing and siding construction for support, alignment or rigidity
Truss chords are parallel to roof pitch, allowing more overhead space for movement or storage of materials
All new, tested pipe is used exclusively

A Swiss-Lok Representative Will Be Available For Information At The Convention

All stress calculations for SWISS-LOK building structures conform with A.I.S.C. standards. Any type of roofing and siding may be used, and standard wall tying and sheet metal fastening are applicable. For descriptive, illustrated literature, write:

SWISS FABRICATING, INC.

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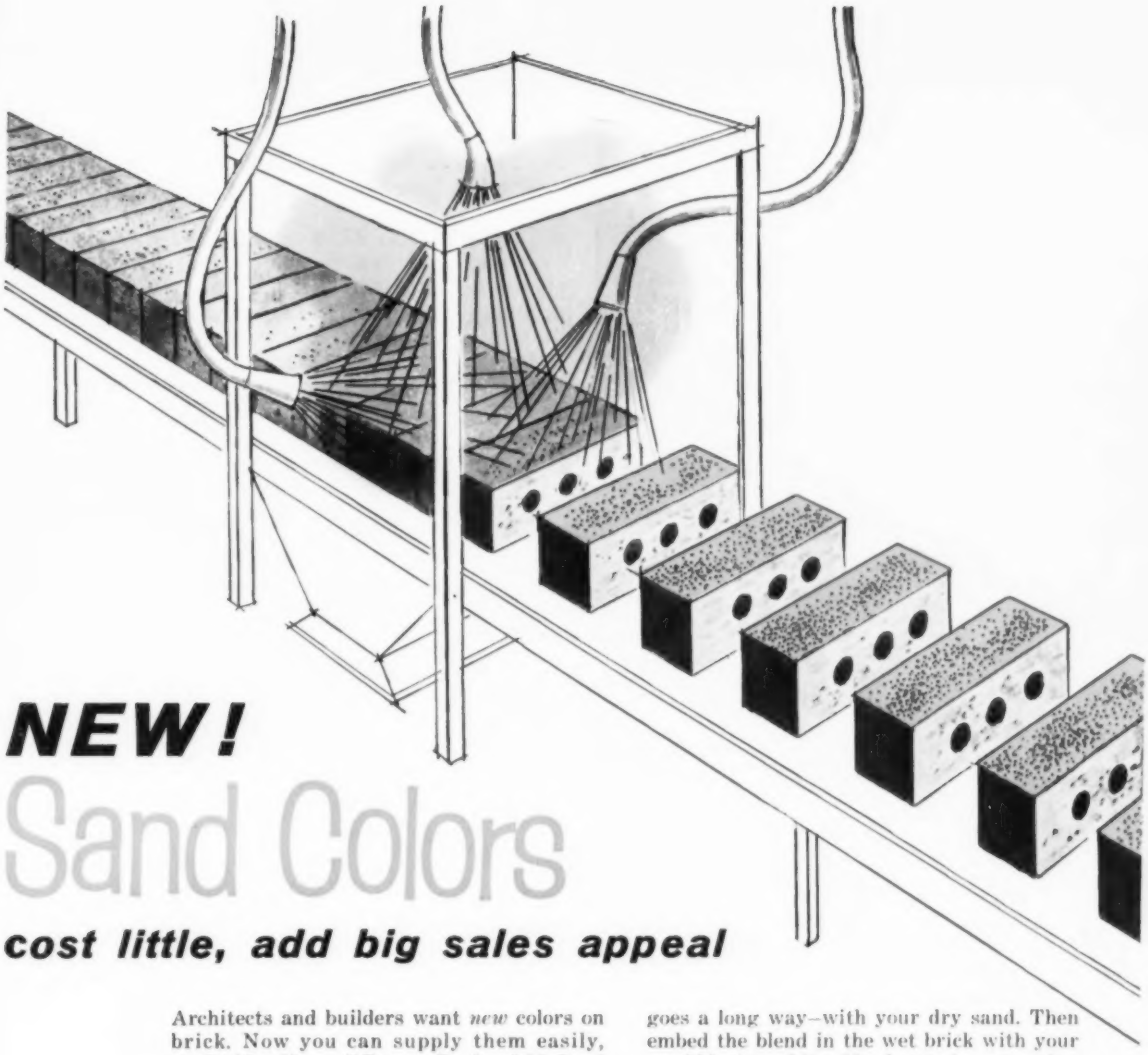

NEW!
Sand Colors
cost little, add big sales appeal

Architects and builders want *new* colors on brick. Now you can supply them easily, profitably. New, different Drakenfeld Sand Colors...

White	Gray	Blue
Pink	Green	Yellow

...can add salesmaking attractiveness to your brick at an average cost of only $2.50 per 1000 bricks. (Cost may vary from $1.00 to $4.00, depending upon type of sand and desired depth of color.)

Here's how to do it: Get a supply of Drakenfeld Sand Colors. Mix 2% to 8% color—a little goes a long way—with your dry sand. Then embed the blend in the wet brick with your sand blast machine. No change in processing required. No color drying time needed. Your brick can be face set immediately.

New Drakenfeld Sand Colors do not segregate in the mix, are truly bright, and adhere solidly. They can also be applied in sand mold and sand roll-on processes.

Drakenfeld offers a variety of other consistently uniform coloring materials—glaze stains, glaze specks, prepared glazes, engobe stains – to suit every process. We welcome your inquiry.

CALL ON **Drakenfeld**

YOUR PARTNER IN SOLVING COLOR PROBLEMS

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INTRODUCING

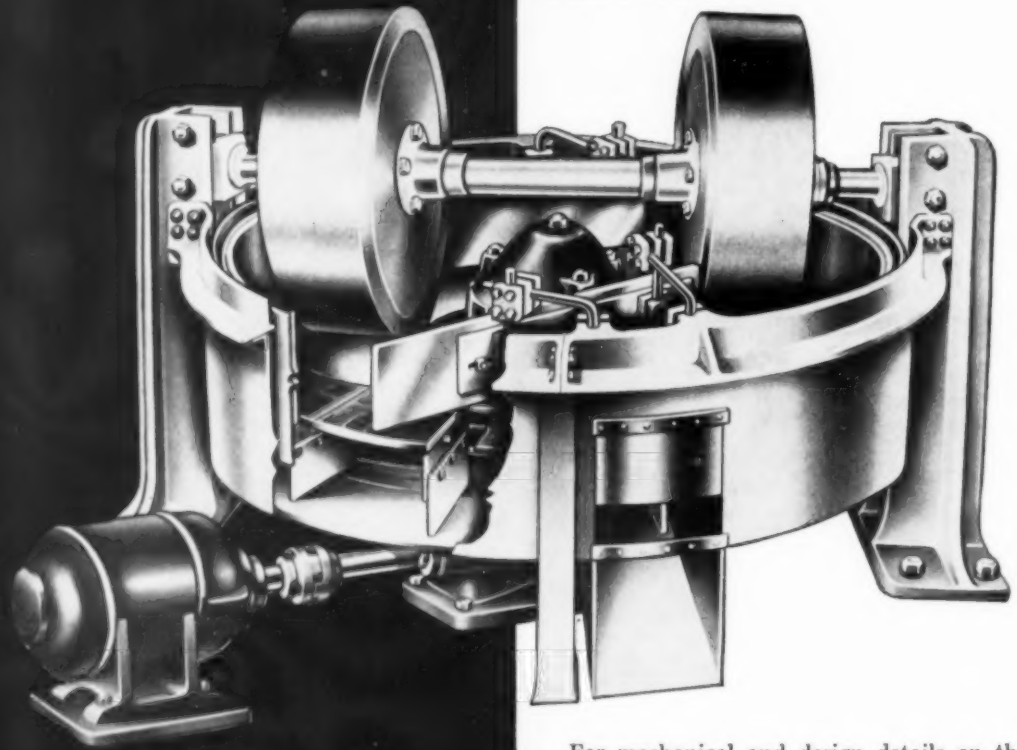
the new High-Efficiency

CLEARFIELD DRY PAN...

Clearfield's newest addition to its wide line of grinding machines for the refractory and ceramic industries has all the features that have made the Clearfield name famous for durability and efficiency in service . . . plus design and construction improvements that assure even greater grinding and production economies.

The new Model 900 comes in 8½ or 9-foot diameters and features a direct motor underdrive. With this method of drive, the worm engages a gear attached to the underside of the main revolving pan bottom; thus power is applied at a point very close to the grinding load . . . less power is needed, vibration is reduced, and since all equipment is accessible from the floor, maintenance and replacements are easier and quicker. Worm and gear operate in an oil bath and are completely enclosed in a dust-and-oil-tight cast-iron housing.

Crushing rolls are wide faced and spread far apart to give maximum crushing area per revolution . . . high production is achieved without excessive pan speeds, thereby reducing vibration, prolonging life of the machine. The ample screen plate area quickly discharges the correctly-ground material to the conveyor for screening or storage. All parts are durably constructed for long-life service with minimum maintenance.



For mechanical and design details on the new Model 900 – or any of our all-purpose grinders – just write for our technical bulletins. No obligation, of course.

CLEARFIELD
MACHINE COMPANY

CLEARFIELD
PENNSYLVANIA, U.S.A.

Pacific Coast Representative: Fernholtz Machinery Company
8468 Melrose Place, Los Angeles 46, Calif.

EDITORIAL

Men, Machines & Money

Many major improvements on equipment for the industry have been made in past years with these improvements designed for reduction in manpower needs and/or improved product.

With old equipment that still operates well, it's hard for a plant operator to decide just when to replace this old equipment with new, improved equipment. There are many factors to be taken in consideration when this expenditure is considered. Will new equipment pay for itself in savings over a given period of time? Will it improve the product to increase sales? How large will the manpower savings be?

A recent magazine article said that $17,000 to $20,000 can be invested in new machinery if it eliminates one production worker. The article further said that this figure will increase because of rising wage rates and increasing fringe benefit costs.

This figure gives us one measuring stick for evaluating capital investments, based on what you can figure on a dollars and cents basis. Since there's no argument that the plant operator should constantly be trying to improve product quality, it becomes a question of timing—just when should the investment be made.

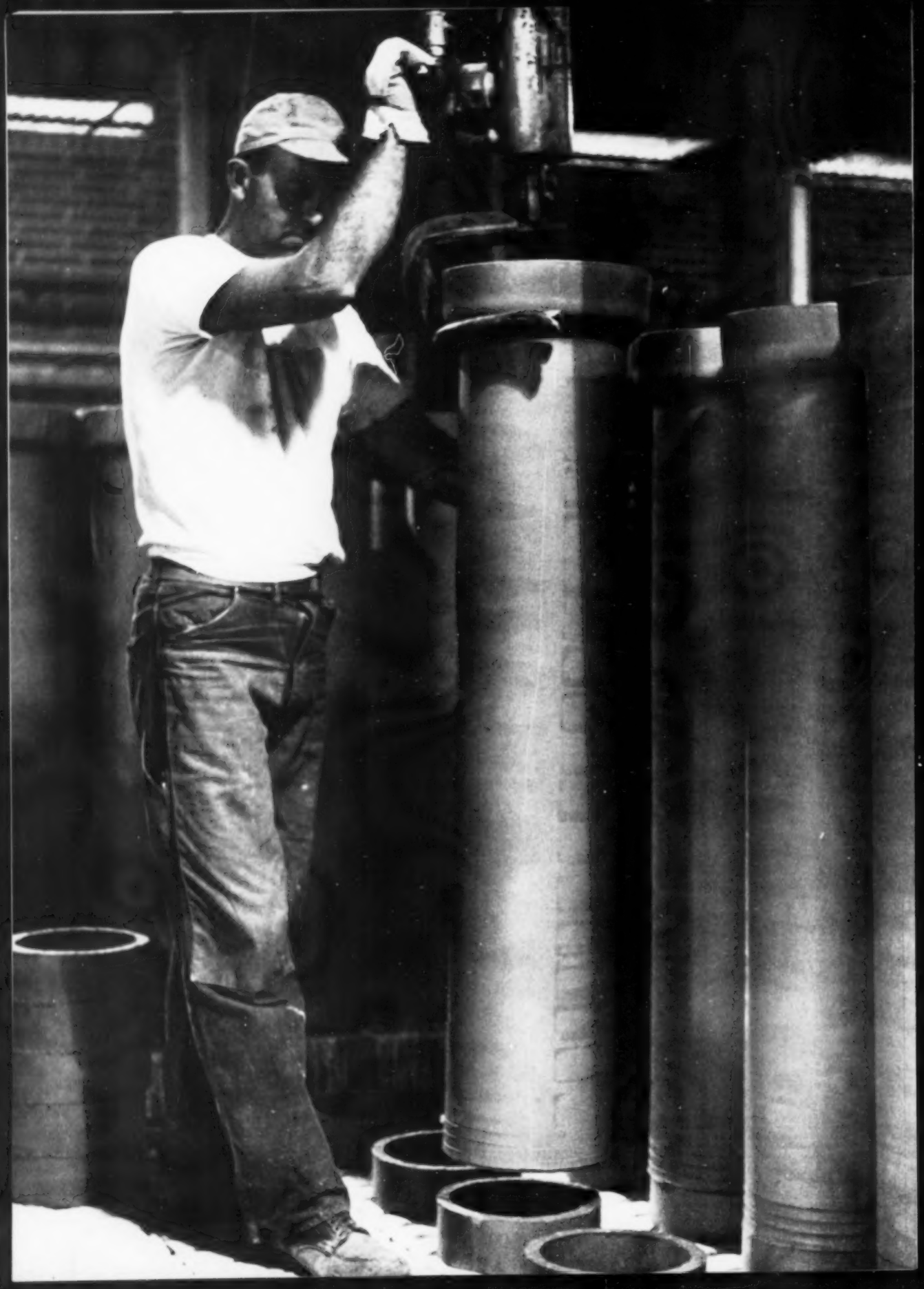
B&CR in July, 1956 published an article by Chuck Kraft (Spend Money to Make Money—Or It Pays to Modernize) showing how Kraftile figures their equipment's present value and the formula used for determining the time to replace aged equipment.

In May, 1955, we published an interview with Kraft and Les Alt, which did a good job of summarizing their attitude toward equipment modernization. We single these two articles out because they can help you to plan your expenditures. Kraft's philosophy, as expressed once to one of our editors, is that if someone can show him that he can replace a piece of equipment installed the day before with another piece that is better or does more, he'll do so. These articles show how Kraftile plans expenditures on the basis of economics and planning, rather than on guesses or hunches.

The heavy clay products industry, whether it be manufacturing brick, pipe, refractories, aggregate, must keep up with the times, bring the plants into the best possible shape. If this is done, there'll be no question about quality of product, price of product, or it's desirability by the customer.

There comes a time when every business, including magazines, must stop, think, look at their operation, see where they're going and why. We did just that in the modernization of this issue.

Each manufacturer must do this, and soon. These next months will be the time to buy equipment to keep costs down. In this time costs will be lower than they will next year, or the year after. Steel costs will rise soon, labor costs will go up, most other costs will rise. The time for you to modernize is right now—before the boom comes—while costs are relatively low, as low as they'll be in the foreseeable time. Think about this now . . . act now.



Longer, stronger straight pipe —a new development

Lehigh Pipe & Tile Invests

Million Plus For Mechanization

A big new tunnel kiln plant, equipped with two horizontal extrusion lines, is pumping out pipe right alongside the old periodic plant of Lehigh Pipe & Tile Co., just out of Fort Dodge, Iowa. The new facilities, housed in a 480 x 307′ (at the longest and widest) brick and transite building, are designed to ultimately replace the old plant entirely.

Immediate plans are to renovate the older plant to some extent. Work on the $2.5 million addition is still continuing with the company presently installing a double line, 60′ long Star Foundry slip seal line in a new 160′ building.

More Modernization

The company is well-equipped to throw even more production into the addition with ample room in the layout for more clay storage bins, more grinding and dryers. The plant has been designed for easy inclusion of this capacity. At present plans are being developed for a hydraulic vertical press with the P&I. Octopus handling equipment and two additional extruders.

The old plant continues with 2 steam presses with manufacture solely of large pipe diameters, up to 36″. The new plant is producing smaller pipe up to 12″ size in lengths of up to 5′; also produces flue lining in small sizes and drain tile 4″ through 12″.

Plant Operation

Despite the abundance of equipment, the operation pattern of the plant is relatively simple. At the pit, adjacent to the plant, clay is shot and crushed. The plant does no blending since they've found their clay is uniform and good. Overburden, ranging from 6 to 20′, is no problem either.

Clay is loaded, by a ¾ yd. Link-Belt Speeder or ½ yd. Buckeye,

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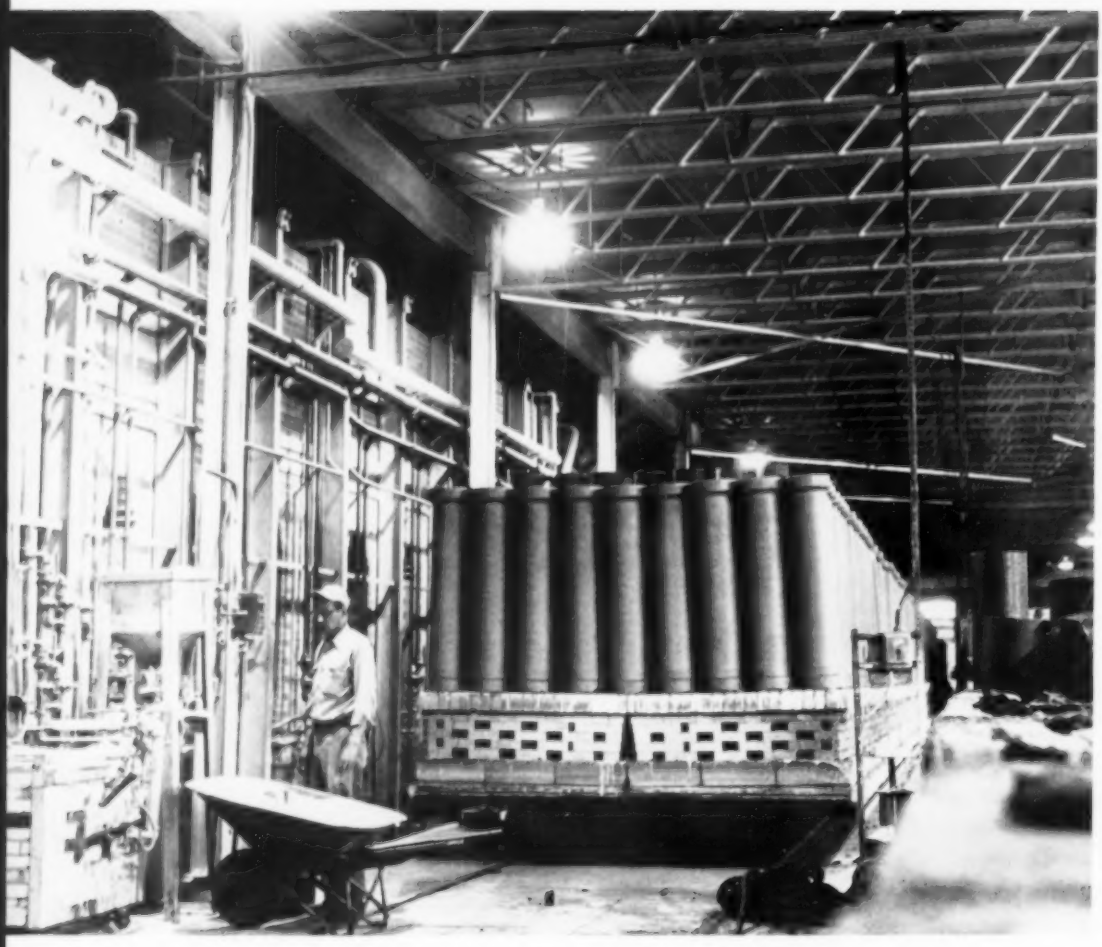


Plant engineer Hendricks stands by salt zone of Allied tunnel kiln. Car unloading area is at right rear.

into two Ford F-600 trucks. These trucks unload in a raised shed that houses a hopper leading to a Link-Belt apron feeder that moves clay then into an Eagle double roll crusher. The crusher, powered by 100 hp motor and using 4' toothed rolls, breaks clay down to 4" or less.

This crushed clay goes by conveyor into the main plant building and is transferred to another conveyor. From here, movement is to a hopper on the apron feeder over the dry pan. This feeder automatically, by amperage on the 100 hp dry pan motor, operates automatically. The plant essentially has a one-man grinding operation. From the 10' Stevenson dry pan, ground clay goes by bucket elevator to Leahy 4 x 10' heated screens. Tailings, of course, move back through the dry pan.

Huge Bins

One of the first things noticed on seeing the plant are the huge storage bins in the main building. The first-ground clay storage is in two of these Columbia bins, with 90 ton capacity in each. Lehigh has found that use of the heated screens helps control clay moisture for better bin flow and no bridging.

Each bin feeds clay out through screw conveyors to a conveyor belt. The clay then goes by bucket elevator to two more bins, indentical in shape and capacity. A rubber scraper directs clay flow to the desired bin. By use of these four large bins, Lehigh has considerable inside storage capacity for ground clay. Grinding is done on a 8 hour basis at the plant.

Double Pug Line

One bin serves each of the two—one F-R-H WX and a WJ—pug mills. Twin screw feeders move the clay from bin to pug, with water added before the pug mill.

The company uses a small percentage of barium carbonate for their hard red shale. No other additive is used except for about 5% reclaimed pipe which is added at the pit.

The whole operation, from bin to extrusion, is run as one unit controlled by one man at each of the machines. Manpower all told, in this area, is the man on the machine, one service man, and one operating a fork truck.

Each of the machines is hooked into Pearne & Lacy horizontal extrusion machinery. Between the two, by changing dies as necessary, pipe can be made from 4 to 12″ in diameter, up to 5′ in length. Standard, or most common, production run is of 4-6″ on 3′ lengths. Another big production pipe is the 8 to 12″ on 4′ lengths.

The P&L extrusion machinery is standard, of this type. The pipe is automatically extruded, reamed and finished, and set onto pallets.

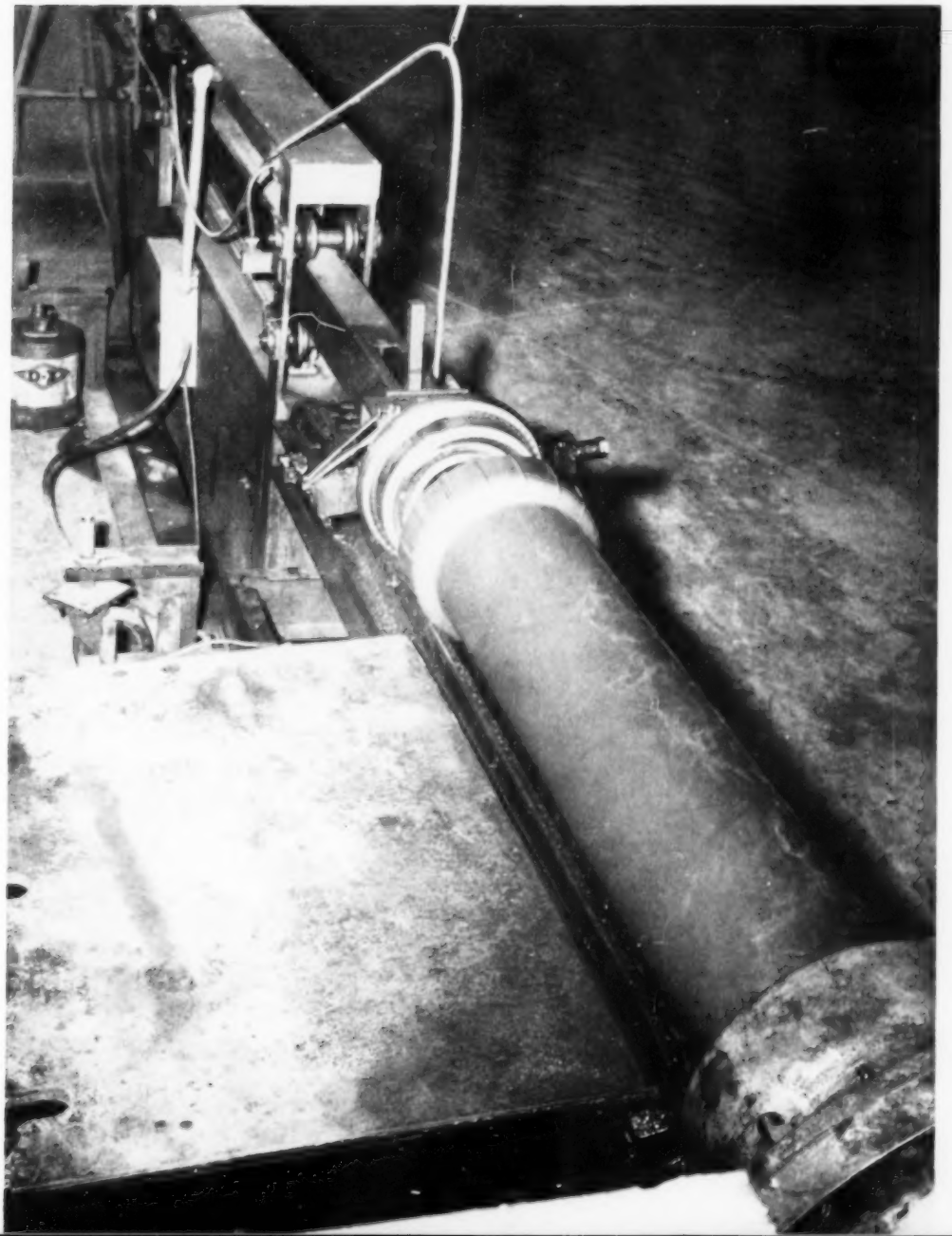
Pallets, fed automatically, hold 24 of the 6″ pipe. The pallet supplying machine is fed by the fork truck operator as the supply gets low. Lehigh reports that the automatic process, once in and tuned up, has been very reliable and has, of course, resulted in greatly lessened need for manpower.

To Drying

The pipe go to drying on the pallets, into one of the four drying chambers. These drying rooms, all alongside each other in a line, are 105 x 40′. Each dryer is in-

Continued on page 61

Below is an overhead view of P&L unit forming pipe; plant has two of these units.



WHY DID PAYNE CHOOSE VARCO?

Varco Clay Storage Building
at Payne Brick Company,
Elgin, Texas

"Varco had the building that could give us clay storage at low cost, and they could erect it fast," stated O. L. Payne, president of Payne Brick Company. "It was just good business to go with Varco, and we're glad we did."

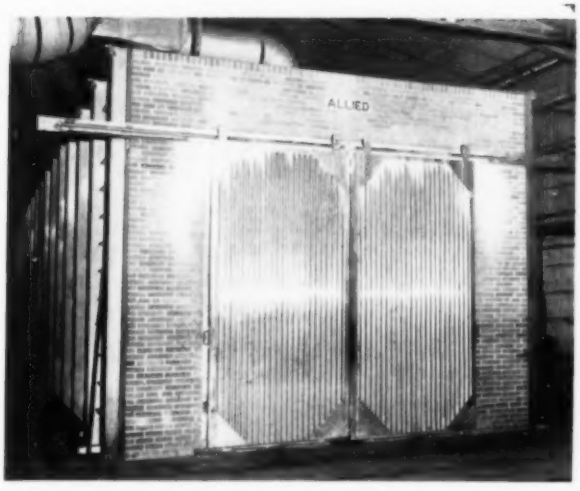
Give your plant protection against wet-clay down time with a low-cost Varco clay storage building. These sturdy, maintenance-free structures have been proven throughout the brick and clay industry and they can be erected on your foundation at exceedingly economical cost. Available in 60, 80, or 100-foot clear spans, the Varco building is designed to handle any type conveyor system up to a 24-inch belt, and can be covered with aluminum or galvanized siding.

Varco
STEEL BUILDINGS

R. G. VARNER STEEL PRODUCTS, INC. P. O. BOX 781 • PINE BLUFF, ARKANSAS

New plant was built right behind old periodic operation.

Each car is 10′ x 10′; holding about 4 tons of clay pipe.



Kiln operates on 50 hour cycle from pipe entrance to exit; pre-dryer is used by Lehigh.

Lehigh's New Plant Addition . . .

dividually controlled in a re-circulating set-up using New York blowers. Heat is supplied by Maxon burners with controls by Minneapolis-Honeywell. This control is completely automatic, for both heat and humidity.

In operation, the dryers start with high humidity and reduce it as drying progresses. Top dryer temperature is up to 225 deg. during the 40 hour cycle. The dryers are all equipped with Dravo grate flooring for better circulation and control.

Allied Tunnel

Dried pipe are taken, again on pallets by fork trucks, to a 4 man setting gang at the loading dock right alongside the tunnel kiln. Depending on pipe size, each of the 10 x 10′ kiln cars holds some 4 tons of pipe.

The cars go first into a pre-dryer unit, 40′ long, holding four cars for four hours. Heating of the pre-dryer is from the kiln, with temperature about that of the dryer exit, some 225 deg.

The 400′ Allied tunnel kiln, adjacent to the pre-dryer, has cars fed by hydraulic pusher into the entrance where temperature is 275 deg.

The kiln operates on a 50 hour cycle from pipe entrance to exit. Firing is with 52 North American burners, dual-fuel with #5 oil as standby and a 150,000 gal. oil storage tank. The oil is heated by steam coils during winter with an additive used to keep water in suspension.

Here's a view of OSU building where first full scale industry report on block took place. At top is a view of the meeting room and attendees.

B&CR-OSU Sponsor First Meeting for Overall Industry Look At

What's Coming For Lightweight Clay Block

Almost 250 brick, aggregate and equipment men attended the two day Clay Bonded Block meeting in Columbus, Ohio on March 19-20. Meeting at the Ohio Union Building under the point sponsorship of Ohio State University and Brick & Clay Record those attending heard 13 speakers outline the clay bonded block development to date. Thirty states and two Canadian provinces were represented in a group that included research men, product development managers and general managers.

Speakers at the meeting represented several different approaches to clay bonded block production and ranged from Henry Burns, operator of the first production unit to three speakers from Ohio State who spoke on theories and new types of equipment developed at the experiment station of the school.

Burns Pilot Operation

Burns recounted the results of one year's operation of his pilot plant and studies that led up to the establishment of the first commercially successful clay block operation. He brought out that size grading of the aggregate, percentage of clay used for bonding and the water content of the batch were important points in the manufacture and that permissable variations from standard were quite limited.

He stated that during the first year of operation he was able to produce 250,000 clay bonded block and that there had been a good acceptance of these by the builders, designers and masons of his sales area. A group of slides were shown illustrating the recent enlargement and improvement of the clay block operation at the Macon, Ga. plant.

Burns said that currently he has increased production capacity to 8,000 block each day and that the operation can now be considered well out of the pilot plant stage.

Dry-Press Block

Bob Poole, sales engineer for Chisolm, Boyd & White Co. exhibited samples of block made on his company's dry press in the Chicago test center. These units, made with several different aggregates and bonded with clays used in production of Chicago "common", were especially free from flaws.

Poole stated that his Company had approached the clay block idea from the standpoint of producing a superior through the wall facing unit and their original work was with four inch high units which could be made on standard dry dresses; however interest had been so

Continued on next page

L. E. Pfeiffenberger

Arch Gmeiner

Charles Goodman

high that they were now designing a new series of machine that could make eight inch high units.

Three of the papers given to the group were by members of Ohio State University. William Shook, Supervisor of Ceramic Research, covered aggregates in general and told of continuing work at the University in the investigation of Ohio raw materials. Louis Vandergrift, Professor of Civil Engineering, covered the use of clay aggregates in portland concretes. In particular he brought out the limitations of such concrete, due for the most part to the characteristics of cement. It became apparent by inference that the clay bonded aggregate does not exhibit the same problems in use.

Dr. J. O. Everhart, chairman of the Department of Ceramic Engineering, pointed out in a discussion on raw material evaluation that most materials used in brick producing areas were prospective aggregate raw materials.

He explained how the clays of Ohio were checked, first by small laboratory sized batches and then, the more promising, in larger quantities under conditions approximating commercial practice. Prospective producers were urged to make similar small scale studies in order to hold development costs to minimum amounts.

Among the best received talks were those given by L. E. Pfeiffenberger, Technical Director of The Expanded Clay and Shale Association and Charles Goodman, Product Development Manager, Materials Service Corp., Chicago.

Sintering Process

Pfeiffenberger brought a great amount of experience with the moving grate process to the meeting and described in some detail the steps that are required in the production of aggregate by this method.

Goodman told of his company's rotary kiln aggregate plant at Ottawa, Illinois and the product that is produced there. He was optimistic as to the suitability of this aggregate for the manufacture of clay bonded block. In work with Armour Research, they have developed standard size block weighing only 22-23 lbs. and meeting minimum strength requirements.

In their development work, they had noted a firing shrinkage of 1½% which he considered more than "nominal"; however the use of additives promised to reduce this figure. In so far as costs were concerned, he said that his studies indicated that the capital cost of a clay block operation would be about the same as a concrete block plant with autoclaves for the curing of the block, and that operation costs would be about the same.

The savings due to the elimination of portland cements as the binding agent would be partially offset by the higher cost of operating a kiln over those costs incurred with an autoclave. Apparently some cost advantage would remain with the clay block.

Gil Robinson, Clemson College, reviewed techniques being used to produce block containing varying amounts of vermiculite. It was brought out that vermiculite is a cheap material, on a volume basis comparing favorably with heavier clay aggregate. It can be used to replace part of the heavier aggregate. With pressing techniques and in slush casting, mixtures of clay and vermiculite have proven to be feasible. In use it serves to decrease the density of the block and offers some outstanding advantages in that vermiculite-containing mixture will have good pouring properties and works exceptionally well in available block making machinery.

Robinson was emphatic in saying that the best mixture for production of clay bonded block would contain much more water than a comparable cement concrete mix and would appear to be very sloppy to a concrete block machine operator. For good results the developer would have to insist on using adequate water.

Block Presses

Karl Nensewitz, School Director for the Besser Co., described the operation of a block machine and the typical process layout of a normal concrete block operation. It was stated that in so far as forming was concerned, the clay bonded block would be easier to make than current units and that costs would be the same.

The advantage of using organic binders with the bonding clay was covered by Arch Gmeiner of Kimberly-Clark Corp. When using weaker clays the added green strength and dry strength imparted by the use of such binders such as Additive-A would allow successful production. Gmeiner was optimistic as to the number of clays that would be satisfactory for use as bonding agents with moderate and economical use of additives. In addition to Additive-A, other products being used for similar purposes in the industry include Polyfon, Goulac and Glutrine.

Henry Burns

Bob Poole

Karl Nensewitz

Of special interest to prospective producers located in areas where commercial supplies of lightweight clay aggregates are not now available was a report by Dean Tinker on a new development by his company. He has under test in a pilot plant stage, a sintering machine that is characterized by moving the charge on a fixed hearth and which can be used to produce varying quantities of aggregate at compatible costs. Tinker expects the process to prove competitive with current methods.

Important developments at the Geneva laboratories of SCPRF were reported by Director Robert Taylor. Taylor said that production runs had been made in plants using the aggregate that has been developed at the center and that results were exceptionally good. In one instance the weight of a four and one half pound brick was reduced to something well under three pounds and also a corresponding improvement in drying and firing was experienced.

Taylor announced that two of the aggregate furnaces were scheduled to be built in 1959 and, as soon as these had been proven in use, the balance of the members of the Foundation would be invited to consider the addition of the furnace to their productive capacities. Demonstrating the versatility of the Foundation's furnace, he exhibited aggregate, produced from cone 31 fire clay, which weighed less than ten pounds per cubic foot. Taylor was optimistic regarding the effect that the lightweight aggregate principle would have on the improvement of quality and reduction in wall cost of presently produced facing materials.

The meeting was concluded by a report on the potential market that could be enjoyed by the clay bonded block producer. J. J. Svec, Executive Editor of BRICK & CLAY RECORD told the meeting that currently the wall volume of non-clay masonry is more than three times greater than the wall volume being sold by clay units. If producers can make clay block at a competitive price many markets will readily accept the new unit because of the inherent advantages of a fired clay material. Additionally, he pointed out than many competent and responsible people, familiar with the construction industry and the growth factors in the United States are predicting a building boom during the next 10-15 years that will dwarf anything yet experienced.

Dr. J. O. Everhart

Gil Robinson

Aerial view shows plant site with office bottom left; at upper center is clay storage building; below it is sintering building.

North Central LW Moves Into

Totally new from the ground up, a new lightweight aggregate plant 12 miles from Minneapolis is now in operation using the Leftwich method. The plant, North Central Lightweight Aggregate Corp., was carefully researched by clay testing and exploration before the decision to build the 1.4 million plus plant was made.

Initial exploration and eventual clay deposit discovery was done by executive vice president-general sales manager Bill Heney who found a 300 acre site near the Soo railroad line.

Based on this discovery, the North Central plant began construction in December, 1957 and finally went into full production on October 20.

In the operation, Cat D-6 digs the clay in the pit which is adjacent to the plant. Under full production, North Central will contract the pit work and transfer the D-6 for use in the 200 x 30′ storage shed. The latter is built of steel with aluminum siding, holding about 7 days run.

The Cat is used to move clay into the Barber-Greene feeder. From here, the raw clay moves up a conveyor 30′ to a Jeffrey Mud Hog crusher and then to a granulated clay hopper. Clay initially is crushed to about ¼″ size.

From the steel bin, holding about 10 yards, clay moves up an inclined conveyor. The plant, by the way, uses Barber-Greene equipment almost totally. Three bins are in line over the conveyor, holding raw clay, fines and tailings, and coal. As the belt moves under the bins, proper proportions of each are added automatically.

Coal Tunnel

Lignite or petroleum coke is dumped from railroad cars on the siding that runs right into the plant. The fuel then has one of two destinations. North Central has an under-track conveyor system that leads right to the fuel bin. The conveyor boom is mounted on tracks so that

Twin City Aggregate Market

the boom can swing to either stockpile fuel alongside the tracks or dump right into the bin.

Bill Heney reports that the plant uses fuel at a rate of 12% to 1% return fines and the rest raw clay. The coal is crushed at the base of the boom for proper size.

The conveyor belt under the bins leads directly up to a pelletizer from which the mixture drops into the sintering belt feed. This pelletizer is a Toma standard 12′ long unit sitting directly over the sintering grate.

Sintering Grate

Feed onto the belt is by a swinging spout that lays a bed about 6″ deep. Firing is done with #2 oil through 4 Hauck burners. The grate is 88′ long with steel sidewalls to get better production capacity.

Igniting temperature goes up to 2100°F with the usual range of 1900-2100°. The plant, designed by R. Frank Leftwich, uses the Leftwich system of vacuum boxes. There are 7 vacuum boxes alongside the belt, each hooked to varying sizes of American Blowers and individual U. S. Motors. Power starts at 15 hp and builds up to 75 hp as you go toward the discharge end of the grate. The grate itself travels at some 6 fpm.

The fired cake falls off the grate end to a Simplicity grizzly and then onto an apron feeder. Return fines go by metal conveyor to the return fines bin. The hot cake conveyor, also metal, moves the cake to a storage pile.

The cake can be taken almost immediately from storage, if desired. Water is dropped on the storage pile to cool the cake for handling by an American stiff leg derrick using a 2 cu. yd. bucket. The derrick drops the aggregate into a Simplicity D'Centegrator which crushes to ⅜″ and under. Then aggregate goes over a Simplicity screen which recirculates.

Continued on next page

President Schmitt, left, with executive VP and sales manager Heney operate North Central

Here's the grinding and silo area of plant; they are second LW plant to use a new type of impactor.

North Central's New Operation . . .

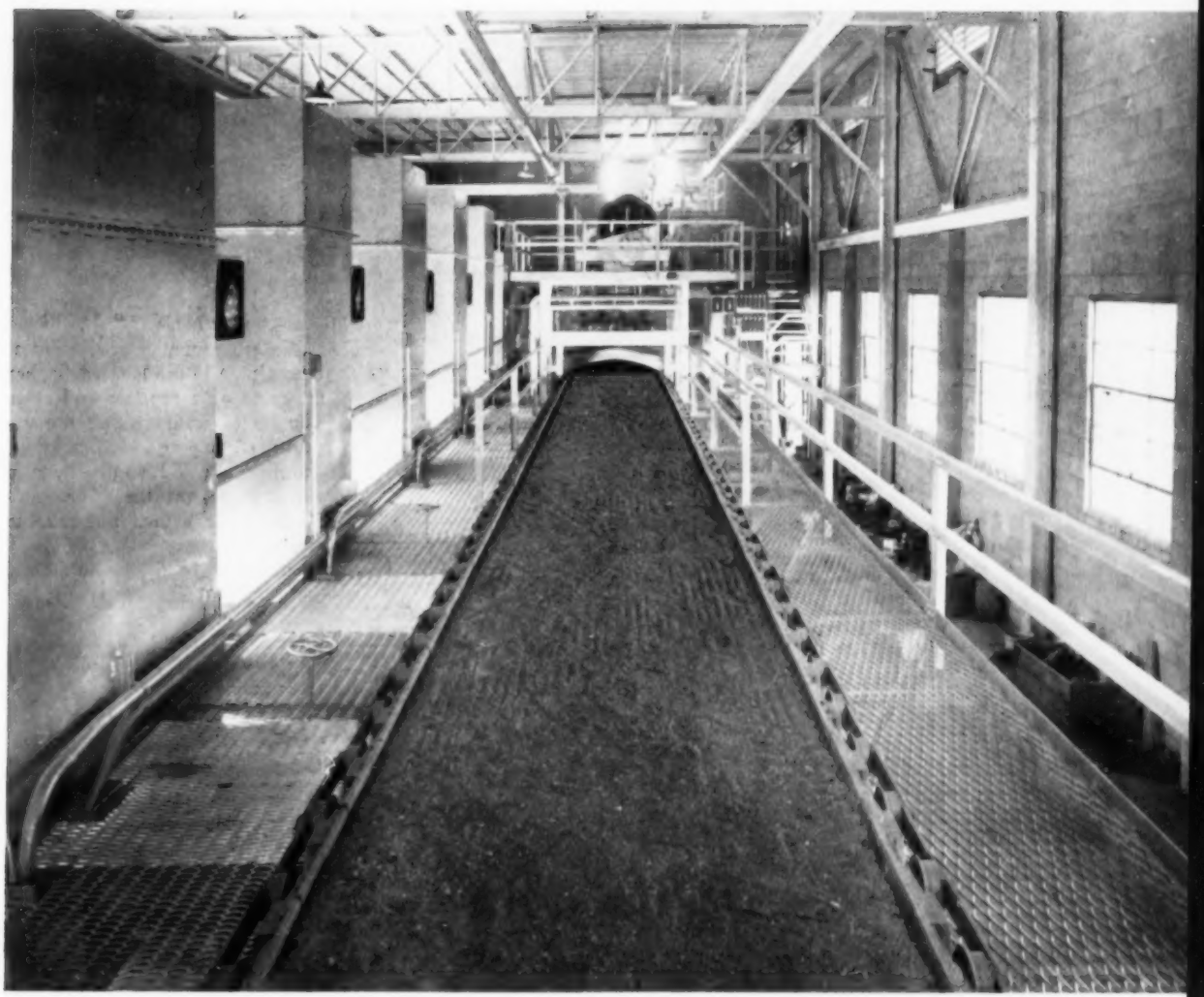
Two silos are used by North Central, one for fines and one for block mix. Each silo, holding 750 yards, has screens at the top. North Central also has B-G truck loading units which load either truck or rail car by belt from the silo. Shipments to date are running about 50-50 truck and rail, with the main markets being block and structural uses.

Plant capacity is 1024 yards per day of aggregate weighing about 1550 lbs. to the yard. Some 21 men are employed on a 24 hour, 7 day basis.

One nice feature of the plant is the straight line operation. From raw clay storage to grate discharge the plant is in an almost straight line. A roughly right-angle turn is then made to the grinding, screening and storage parts, with the derrick located in the corner of the L.

The plant has been designed to allow for another sintering grate alongside the present one when sales capacity and other factors allow. At present, the plant has excess grinding capacity in view of this design.

President of North Central is Paul J. Schmitt, with Heney executive VP and general sales manager. Clifford Swanson is plant manager and Darrell Barnett is secretary-controller.



Plant design is almost as straight a line as in this view looking toward firing area of sintering grate. Pelletizer sits directly above firing zone at rear.

A plant operator's manual on:

De-airing

Part III: Theory and practice to help plant operator understand, control the de-airing process.

By
J. George Seanor

If the vacuum pump is located at the highest possible point in the vacuum system, and is reached by a long vertical, or inclined pipe, more water-vapor will be condensed than in a short pipe, and it will run back down into the vacuum chamber, or to the lowest point in the system.

Remove Before Pump

If a condensation tank is used (See March) much of the water-vapor and dust will be removed before it reaches the pump, which is extremely important in long pump life.

One plant formerly processed their clay at 3" absolute pressure and accumulated from 7 to 8 gallons of water in the condensation tank per 8 hour shift.

They installed a larger pump and are now processing at 1" absolute pressure, and at this pressure they accumulate 15 gallons of water per 8 hour shift. This 15 gallons is about one-tenth of one percent of the pugging water. The condensed water is milky in color indicating that it has entrapped many small clay particles.

A long piping system, wherein the pump is located at considerable distance away from the vacuum chamber, and higher than the vacuum chamber, is best for heavy clay plants.

However, it must be remembered that with this plan the size of the pipe should be greater than is specified in the pump catalog. The technical service manager, of one pump company, told the writer that the pipe diameter in a system like Fig. V-1, should be much larger than the inlets to the pump, and that if the pump inlets were 1½" the piping should be 2½" to 3" in diameter.

This reduces the friction and allows some extra space for accumulations of slime and water pockets.

No Pockets, Traps

There should never be any pockets, traps, or low places in the vacuum piping that could fill up completely with water from condensation.

Sometimes, the needle of the vacuum gauge begins to swing to and fro. This usually occurs shortly after starting up in the morning. These swings are due to air gurgling through a pocket full of water somewhere in the line.

When the reading on the vacuum gauge drops gradually throughout the day it is generally due to water which is accumulating at some low point in the system. An oscillating needle on the vacuum gauge, and gradually dropping vacuum, do not occur when a properly designed condensation tank is used, and drained each morning before starting the vacuum pump.

The piping between the pump and the condensation tank should slope towards the tank so that any condensed water drains back, down, into the tank.

Use A Filter

A vacuum filter should be used, and it is customarily located near the vacuum chamber on the machine. However, it should be located near the pump, in which case more or less water-vapor has condensed before it can help to clog up the filter.

The type of filter selected should have as little internal resistance as possible. It should be much larger than a proper filter for dry air rather free from dust. The filter should not reduce the pressure between a vacuum gauge on the vacuum chamber and one on the pump, more than ¼".

The writer has visited plants where the resistance through the vacuum filter reduced the vacuum between pump and vacuum chamber more than 1".

Keep Easy To Clean

We are generally advised in vacuum piping to use long radius bends rather than to use tees and crosses. The writer would rather use much over-sized piping and crosses, as shown in Fig. V-1, so that by removing the plugs, the pipe can be swabbed out with a ram-rod easily and often.

It is indeed a project to dismantle and clean out vacuum piping if plenty of crosses and tees and plugs are not used, and workmen dislike to do it and do it half-heartedly, unless the piping is engineered for easy cleaning.

If over-sized piping is used there is more area over which to cool and condense water-vapor, before it reaches the vacuum pump. Also, if the piping is over-sized, small accumulations of slime do not reduce the efficiency of the system, until the periodic cleaning out time comes around.

If a condensation tank, which is properly designed (Fig. V-1) is used, and if the vacuum filter is placed between this tank and the pump, and near a pump located above the condensation tank, the filter element in the vacuum filter seldom needs to be changed.

If the vacuum filter is placed near the vacuum chamber, and no condensation tank is used, the filter element must be changed frequently to

prevent low efficiency of the system. In the long run, frequent changes of filter elements will cost more than the installation of a condensation tank and proper piping.

If a vacuum gauge only is used and a drop in vacuum occurs, the foreman usually delays action hoping that it is due to a drop in the barometer. If an absolute pressure gauge is used, drops in vacuum are due to some other cause because the absolute pressure gauge is little affected by changes in the barometer.

The cause of a drop in vacuum can be located by the process of elimination. The first thing to do is to close the valve in the line near the pump, put a vacuum gauge on the pump, and start the pump.

If the vacuum comes up quickly to very close to the barometer, you know that the trouble is not in the pump but elsewhere. Conversely if the vacuum gauge at the pump with the above valve closed, does not quickly approach the barometer you know that the trouble is at the pump.

Leaking Packing

The packing around the drive shaft may be leaking; the drive belts may be slipping so that the pump is not running up to speed; or the vanes in the pump may be badly worn; or possibly the exhaust pipe, from the pump, is clogged.

If no trouble is found at the pump, close the valve in the line near the vacuum chamber, and open the valve near the pump. If the pump pulls a vacuum near the barometer in a few minutes you can assume that the piping system between the vacuum chamber and the pump is probably in good condition.

The word "probably" is used because if the piping is clogged by mud somewhere, the pump will eventually pull enough vacuum on this part of the system to approach the baromter, but with full flow of air from the vacuum chamber the clogged pipe may not let the air through fast enough to maintain full vacuum.

If the pump and the piping system tests OK, the cause of the drop in vacuum is usually a leak into the vacuum chamber on the machine. It may be in the vacuum seal on the auger shaft, under the lid on the vac-

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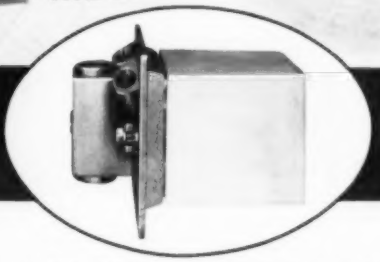
"We slammed the door on Kansas winds



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COMBUSTION EQUIPMENT

Ceramists To Hear 220 Papers At 61st Annual ACS Meeting

Group meets in Chicago at Palmer House on May 17-21 with more than 2500 expected to attend; full program includes plant tours

More than 2500 ceramists will converge on the Palmer House in Chicago, May 17-21, for the 61st Annual Meeting of The American Ceramic Society. This is the world's largest gathering of ceramic scientists and manufacturers.

Presiding over the event will be the Society's president, Richard S. Bradley, vice-president and director of research for the A. P. Green Fire Brick Co., Mexico, Mo. He will conduct the general session and business meeting of the Society on Monday morning, the semi-annual meeting of the Board of Trustees, and the banquet on Tuesday night. He will also induct the new officers of the Society and three Division trustees.

Burch President

A leading glass engineer, scientist and administrator, Oscar G. Burch of Owens-Illinois, will be installed as president. Vice-presidents to take office are J. J. Canfield of Armco Steel Corp., John H. Koenig of Rutgers University, and James I. Mueller of the University of Washington.

New trustees to be inaugurated are: A. C. Siefert of Owens-Corning Fiberglas, for the Glass Division; C. J. Koenig of Ohio State University for White Wares Division; Albert H. Couch of Libbey-Owens-Ford Glass Co., for the National Institute of Ceramic Engineers; and Joseph A. Pask of the University of California for Ceramic Educational Council.

220 Papers

More than 220 papers on the science and technology of ceramics are on the programs of the nine divisions that make up the Society. This is the largest number of papers ever to be offered in the organization's annual meeting.

The longest list of papers for the technical sessions is for the Refractories Division with 43 scheduled for presentation. The Basic Science Division is holding its program to 38 papers, Electronics 33 and White Wares 28. The Glass Division and the Enamel Division each have 20 papers listed.

Highest honors of the American Ceramic world will be awarded as a part of the 61st Annual Meeting. This year two will be named honorary member, setting a new precedent. There will be 24 elevated to Fellows of The American Ceramic Society. Other honors to be presented are the Ross Coffin Purdy Award, the John Jeppson Medal, and the Charles Fergus Binns Medal.

This year's Orton Memorial Lecture will be delivered by David Swan, vice-president of research for the Linde Company, Division of Union Carbide Corp. He is in charge of development and research for the company and is the author of numerous papers in the fields of metallurgy and welding.

Student Prizes

Students of the ceramic schools will receive prizes in two contests. The tenth annual Ferro Student Contest prizes of checks and certificates will be presented as a part of the Enamel Division program, with Ben F. Sweo, technical director of the Ferro Corporation, making the presentations.

The annual student speaking contest will have its semi-finals on Sunday afternoon to reduce the field to four finalists who will compete Sunday evening. William J. Knapp of the University of California and vice-president of the Ceramic Educational Council, is in charge of the event.

As relief from the heavy technical sessions there'll be lighter entertainment events. Included on the program are the Sunday evening reception, the Monday night variety show, the school dinners, the annual banquet and two dances.

Ann Landers Speaks

Departing from tradition, a woman will be the speaker for the annual banquet. Ann Landers, whose column on manners and morals is syndicated to nearly 300 newspapers, will tell something of what she learned from her daily stacks of mail.

Women visitors to the Annual Meeting will have an unusually interesting program of entertainment. Included will be a visit to the Merchandise Mart, a demonstration on cosmetics and hair styling with a hat show, luncheons and parties. In addition, the ladies are invited to join with the Design Division for its Wednesday afternoon program when a panel of delegates to the Congress for Better Living will discuss home furnishings of the present and the future.

Concluding event will be the plant trips on Thursday. Ceramic plants in the Chicago area will open their doors to show the visiting ceramists their factory operations, laboratories and examples of their products.

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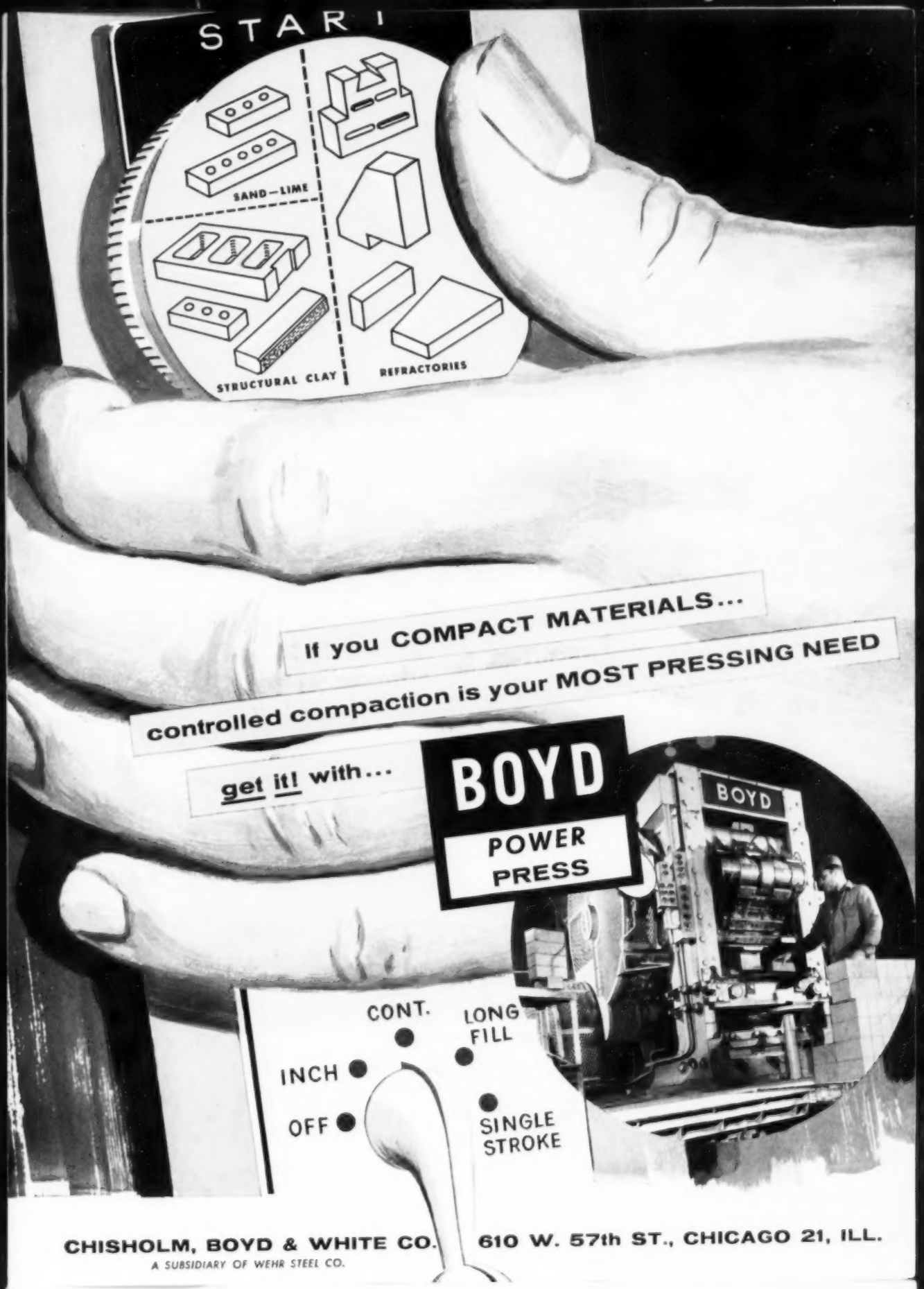
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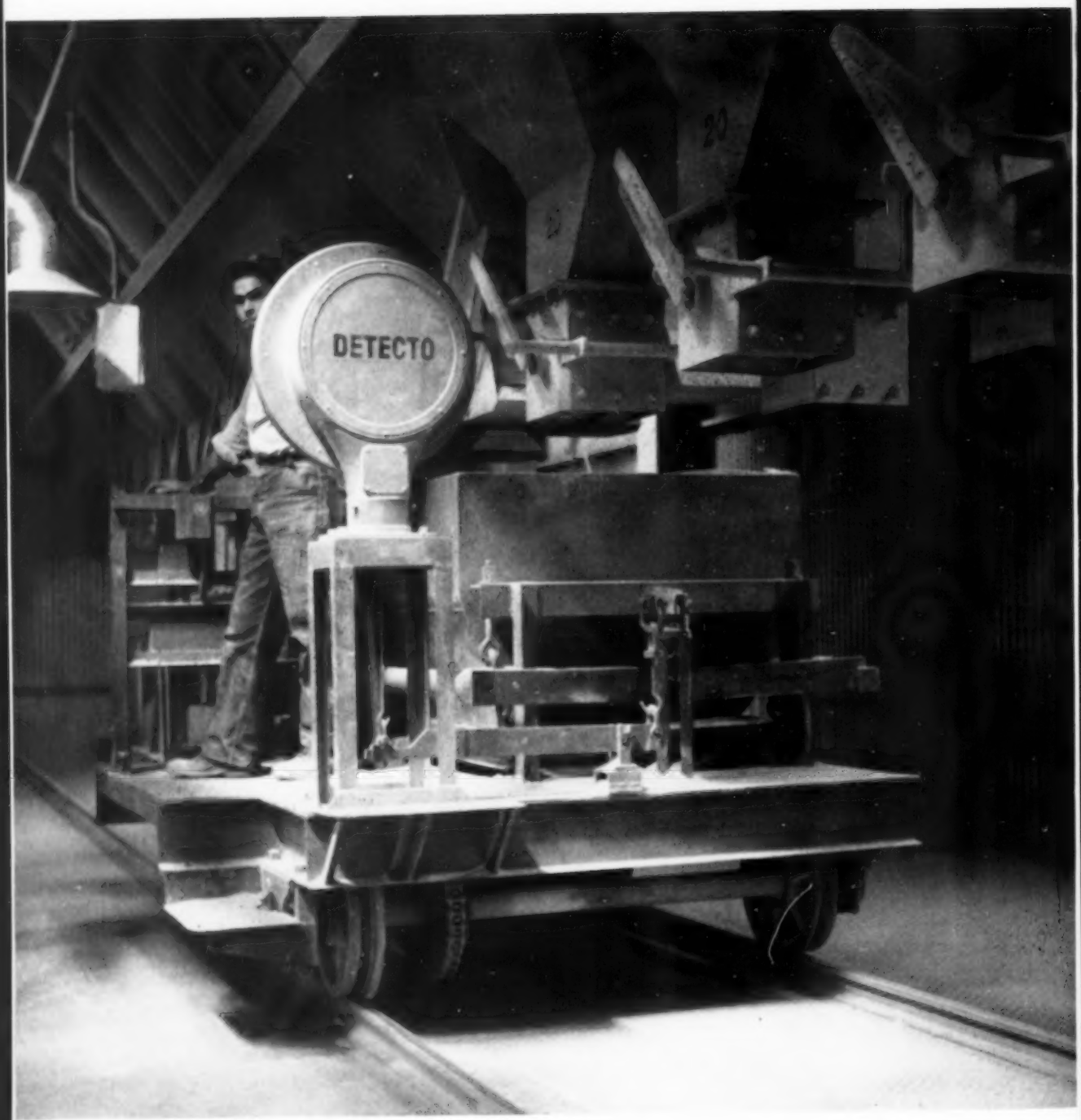

DETECTO

Tunnel Kiln Experience-- 42 Years of it-- Built This New Narco Plant

Company designed operation for automatic batching, low manpower needs; long range plans call for third, even fourth, tunnel kiln

With their first tunnel kiln built in 1917, and a second in 1923, the North American Refractories Co. plant at Farber, Mo., has had long experience with tunnel operation and how a tunnel kiln should operate.

These ideas were incorporated in a new tunnel kiln and plant, built to operate independently of the older plant, which went into operation early in 1958. The tunnel kiln built in 1917 was torn down in 1934 but the one constructed in 1923 is still in full operation, having been remodeled from time to time. This kiln has recently been fitted with a flat suspended crown in the preheat section to accommodate a lower setting.

Plan Additional Tunnel Kilns

North American took all brick operations out of the old plant when the new facilities went into operation. The space remaining was used for production of specialties. With the remodeled kiln in service, the plant's additions in batching, grinding, etc., will be in excess of kiln capacity. Long range plans of the company call for the addition of a third and fourth kiln, equal in size to that of the new one.

Farber, located in the eastern Missouri refractory area, was chosen for the original plant because of an existing shaft mine from which the high grade Missouri plastic fire clay could be won. During ensuing years the original mine was abandoned to take advantage of lower clay costs resulting from open pit mining.

In addition to the plastic clays mined locally, Narco also uses flint clays and high alumina diaspores from the southern Missouri area.

Also Use Flint

Manufacture begins with prospecting crews who search out the isolated deposits of special material, and test drill the pockets. After the borings are tested in the plant laboratory, the extent and quality of each deposit determines how and when that material will be used.

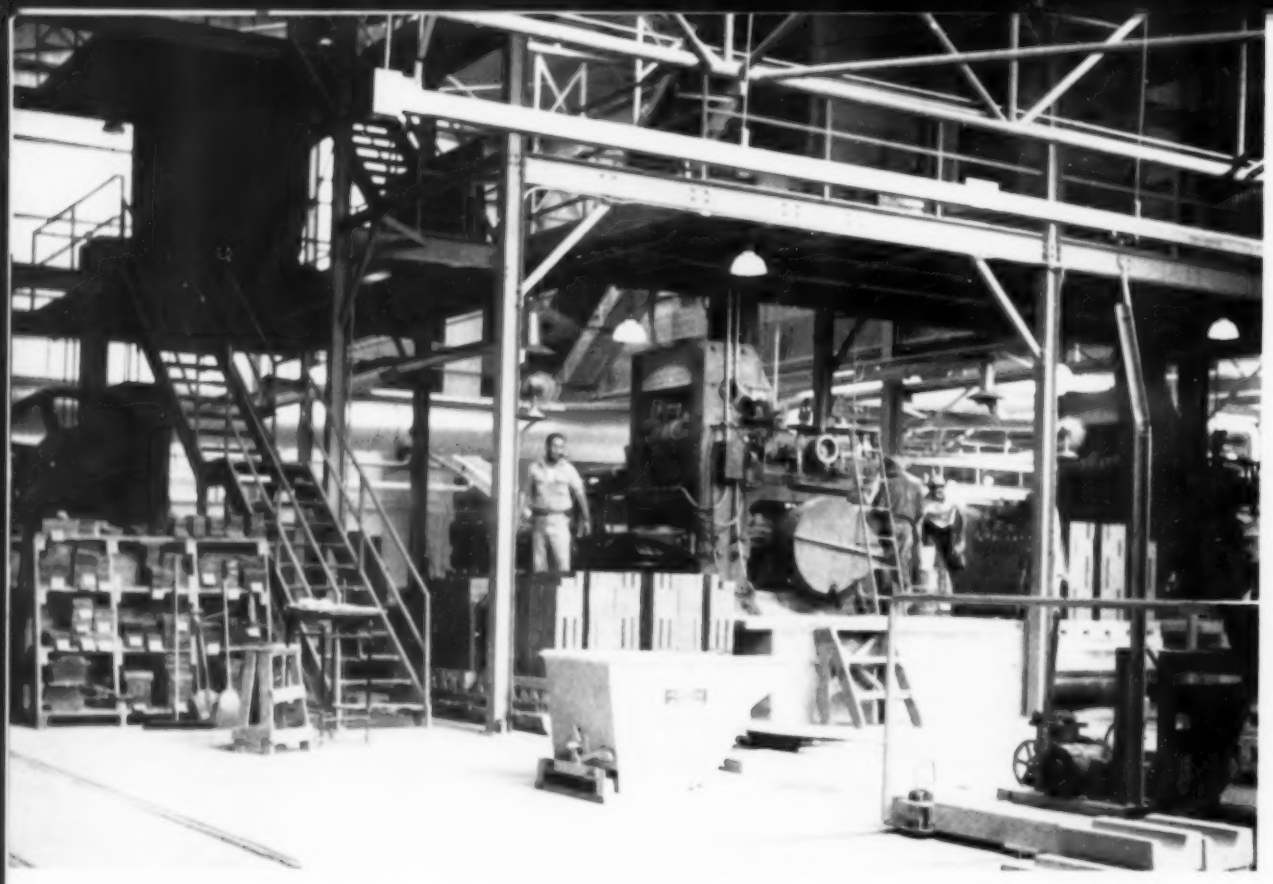
Raw clays move to the plant by truck or open gondola car, depending on distance involved. All clays are stored in the open for a time to weather. Both rail and truck delivered materials are dumped into a receiving hopper through a grizzly. The hopper, holding 30 tons, is served with a drag feeder which moves clay to the primary crusher.

Two Primary Grinders

Two primary crushers are installed in the crushing building. The first, a large Champion jaw crusher, is powered with a 50 hp motor and is used for crushing hard materials such as grog.

An Eagle double roll crusher, using 75 hp., is used for softer materials.

Only one of these units is used at a time with all discharge moving by 24" belt from crusher building to the feed end of a rotary dryer.



Overall view of plant shows loading direct from one of three Boyd presses to cars; plant also has stiff mud line; excess capacity in grinding and batching to allow for later plant expansion program.

North American's New Farber Plant . . . .

The dryer is by-passed by a conveyor for material that meets a specified moisture content. All material outside this moisture range goes through the dryer.

The dryer itself is by McDermott, 60 x 8′, turned with a 60 hp motor. The dried or by-passed clay is discharged onto a 173′ long belt conveyor which moves this clay to a shuttle conveyor set on top of the storage bins.

The dryer is equipped with a North American Mfg. Co. gas burner protected against flame-outs by automatic shut-off. Dust laden gases from the dryer are passed through twin cyclone dust collectors, powered by 15 hp, before being released.

Bin Storage

Crushed and dried material is dumped from the shuttle conveyor into the proper raw material bin, passing through metal chutes which minimize dust. The shuttle conveyors are moved to proper dumping position manually; two additional conveyors are used to distribute final ground clay to other bins.

The raw material bins are set in a bank of 24, with each holding 75 tons. The bins are equipped with multiple spouts so that they may be further sub-divided if desired. All bins are connected with a master dust collecting system.

Final sizing is done with a 10′ Chambers dry pan, fed automatically from a surge bin with a 36″ apron feeder. The surge bin, in turn, is loaded by gravity or batch car from the raw clay bins. The dry pan is equipped with air-loaded mullers, totally enclosed for dust control.

Elevation of clay from the dry pan to the screens is by two flights of 24″ belt conveyor. The clay is plowed from the belt to the top sections of four triple deck screens. Of these, the top deck serves as a scalper, separating coarse grain clay, with this deck unheated but vibrated.

Screening

Six standard mesh sizes are used in combination in the next two decks, with these much finer in mesh size, heated and vibrated. Any two grain sizes can be delivered simultaneously to bucket elevators for storage.

Other mesh size screens are kept available for use when needed. Tailings return to the pan. The two grain sizes of clay separated for production are discharged

Plant has presses elevated to same height as car tops to save effort in loading cars.

A third, and even a fourth, kiln are in Narco's long range plans for the Farber, Mo. operation.

from the twin bucket elevators on two shuttle conveyors at the top of the bins.

When the production order for a particular product is initiated, the mix is issued to the mixer man. An electrified batching car, moving by rail under the bins, equipped with scales and dust collector, gathers the material. After all of the batch components have been loaded the car moves to a position over a Simpson mixer. Each batch is made up to 4,000 lbs., capacity of the mixer.

The batching operation uses a program controller which opens the inlet gates to the mixer, agitates the dry mix a pre-determined length of time, adds a preselected amount of water, finishes mixing, and opens a gate which empties the mixer onto a train of belts leading to the proper production machine.

Program Control

The program controller has four sections of control, one for each of the three dry presses and one for the stiff mud machine. Each section can be set for an individual program. This would include dry mix time, amount of water, and total mix time.

When the program is completed, switches and belts have been automatically set to deliver the batch to the proper production machine. The feed belt passes through a National aerator which fluffs and breaks up the lumps in the batch.

Scrap from the dry presses is accumulated in self-dumping hoppers, taken by conveyor to the batching area and disintegrated by a hammer mill. Discharge from mill moves by elevator to a chute that is electrically switched so that the disintegrated scrap can be separated and returned to the same batch, in small additions.

Minimum Personnel

Personnel has been reduced to a minimum in this material handling operation, with only one man required in the preliminary crushing and drying operation; one man for final grinding and binning; a third man for batching and control for the mixing-delivery system.

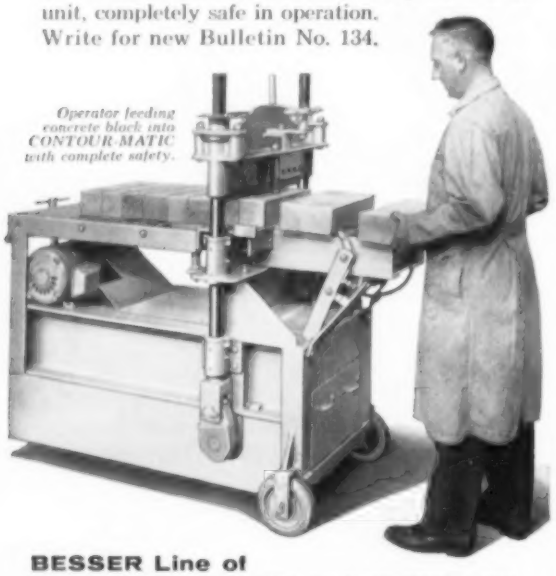
Three Boyd presses and a Bonnot stiff mud line are used by Narco. The presses are elevated to the same height as the car tops.

Continued on page 93

Bigger Profits
with
Besser
CONTOUR-MATIC
the Faster, All-Mechanical Block Splitter with the
SELF-LEVELING BLADES

Now — you can produce as many as 2000 split block per hour with the Besser CONTOUR-MATIC — the all-mechanical, non-hydraulic block splitter with power transmitted through a simple gear train. It's so easy to operate and maintain. Only a few adjustments are necessary. Assures smooth, continuous, profitable operation. Twelve patented, self-leveling blades automatically conform to the contour of the block or stone. Each blade acts like a chisel, splitting material 1" to 8" high. Culls are practically eliminated.

The CONTOUR-MATIC is a compact, mobile unit, completely safe in operation.
Write for new Bulletin No. 134.



Operator feeding concrete block into CONTOUR-MATIC with complete safety.

BESSER Line of BLOCK SPLITTERS and TRIMMERS

CM-24" Power Model Splitter...CM-16" Power Model Splitter...CM-16" Hand-operated Splitter...CM-12" Hand-operated Trimmer . . . CM-9" Hand-operated Trimmer . . . SB-9" Hand-operated Trimmer . . . Pony Junior Trimmer.

BESSER COMPANY
Alpena, Michigan, U. S. A.

Lehigh's New Plant . . .

President Bryant *Chairman Avery*

An atmospheric regulator controls air into the burner to give automatic control of the gas.

Salt, Rasorite

Top temperature in the salt glazing zone of the kiln is 1960 deg. Lehigh feeds salt with a vibrating feeder, using about 1,000 lbs. of table granulation salt to 30 tons of pipe. They also use a gallon of Rasorite to 400 lbs. of salt, mixing with the salt in a wheelbarrow.

Pipe exit from the cooling zone at about 300 deg. Fittings and tees are fired on top of the carload of pipe. Since the plant has some excess production of small size pipe, some of the green pipe are fired in the periodic plant.

Truck Shipping

Ware from kiln cars are unloaded onto a conveyor that goes right to trucks. Most shipments go by truck right to the job, with little shipped by rail. Some strapping is done when needed, but it's minor.

Pipe is handled through the plant by fork trucks: four Clarks with LP, two Clarks with gas, one Automatic electric, inside; and two more Clarks are used outside the building.

The only joints added will be those from the Slip-Seal line. No ceramic glaze or plastisol joints are contemplated at present by the Lehigh management.

Present production of the new addition is 90 tons per day. G. L. Avery is chairman of the board: Joe A. Bryant, president and general manager.

Other officers and supervisory personnel are Dee Bryant, general superintendent; John DeGroff, vice president-sales; Neil Hinds, treasurer and assistant sales; Lowell Hendricks, plant engineer; Arthur DuBois, superintendent; Joe Good, production superintendent; Jim Walter, ceramic engineer.

Even Under The Most Severe Conditions

WET OR DRY, GRANULAR OR LUMPY

Material Flows Steadily
For Dependable, Uniform Feeding,
With A MECO Automatic Feeder!

MECO
SINCE 1910

APRON FEEDERS

Apron Feeder with Ratchet and Torque Arm drive.

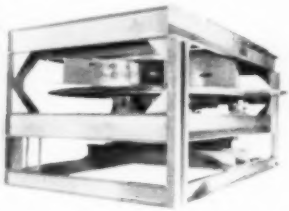
Built for heavy duty and long, trouble-free service, MECO Apron Feeders assure a positive, dependable feeding action. They are self cleaning, easy to control, and require little power to operate. Designed primarily for moving wet, sticky, or plastic material, they can also feed dry, and heavy lumpy material. Can be sprocket driven or pulley driven, or with torque arm, as shown. Write for Bulletin No. 573.

RECIPROCATING PLATE FEEDERS

Reciprocating Plate Feeder, Straightline Type.

Available in both straightline and underslung models, MECO Reciprocating Plate Feeders are self contained units made of welded steel plate and structurals for heavy duty service. Designed for uniform feeding of shale, fire clay, coal, and similar materials, these feeders provide a steady flow to crushers, grinders, dry pans, or other equipment. Write today for Bulletin No. 573.

HEAVY DUTY DISC FEEDERS



Model SR Feeder (Single Speed)

Available in five models, single or variable speed, for specific feed range requirements from a mere trickle up to 80 tons per hour. Furnished as complete units ready for installation, MECO Disc Feeders are designed for automatically controlled feeding, batching or proportioning. They can be used for sand, clay, shale, chemicals, or any crushed or ground materials. Rate of discharge can be varied.

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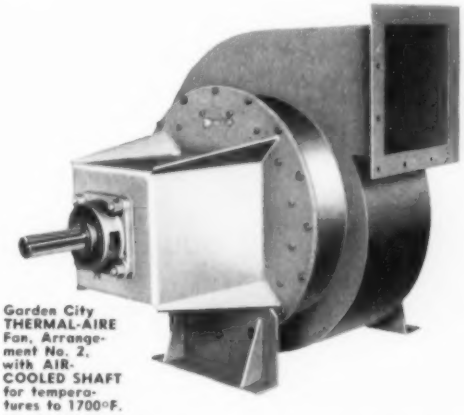

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the proven way to deliver brick or block, faster, more efficiently, at less cost !

One owner says, "The *Pack-Hauler* cuts our loading-labor costs by at least two-thirds" . . . another says, "With four *Pack-Haulers*, we can do the work of 10 regular trucks" . . . and still another says, "Our *Pack-Haulers* save us thousands of dollars each year, in fact they have been a contributing factor to our success down through the years."

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uum chamber, through some of the joints in the vacuum chamber or auger barrel, especially around the bolts which bolt them together.

The vacuum seal between the pug mill and the vacuum chamber may be defective. Not infrequently the opening out of the vacuum chamber into the piping system has become clogged with mud.

There are various ways of locating leaks. Large leaks can be heard. The writer uses a candle to discover small leaks too little to whistle.

Clogged Valves

The men at one plant were troubled with low vacuum for about six weeks. The piping had been dismantled and cleaned repeatedly. All other sources of trouble were examined and found not to be the cause.

After much exasperation one of the men, in cleaning the vacuum piping again, just to be sure, reached his finder up into the throat in the base of the pump and found that it was practically clogged shut, with a hole through a ring of leather hardened mud about the size of a darning needle.

Another plant worried for about three weeks over poor vacuum. Finally one of the workmen, walking around the pump, heard the vee belts squealing because they were slipping. When the belts were tightened the pump came up to speed and the usual vacuum was restored.

On another plant, using a well made water sealed vacuum pump, results were disappointing. Finally the trouble was located as being due to too little volume of water being fed through the pump. This perturbed the plant personnel greatly, because they took pride in the efficiency with which they operated the plant and they were much taken back because some outsider came in and spotted the trouble at a glance.

When rotary vacuum pumps that are sealed with an oil film are used, and only low vacuum is used as in the case of making textured brick, the pump may use an excessive quantity of oil.

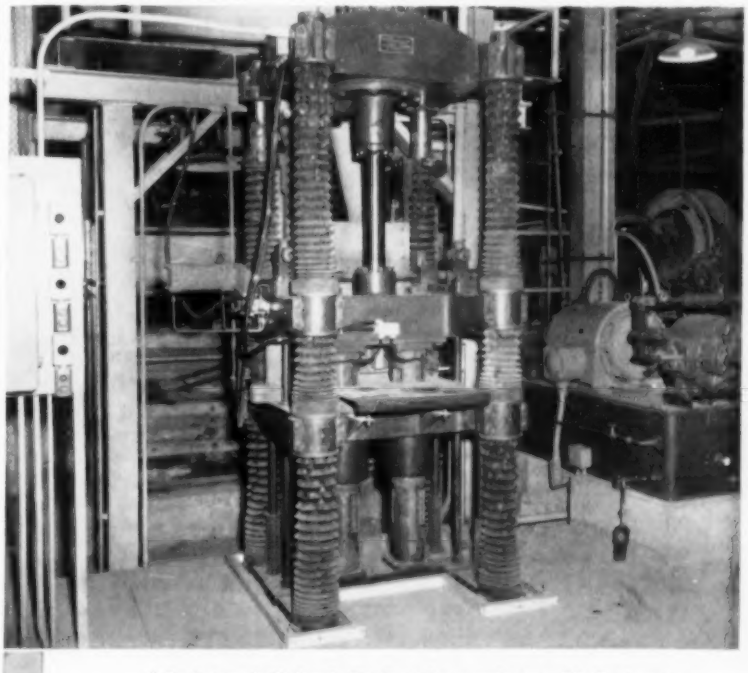
This is because the very large volume of air passing through the pump carries out more oil, through the exhaust, than the smaller volume of air when the pump is operated at high vacuum.

In a case of this kind, the pump's exhaust pipe should be carried straight up, vertically, to a considerable height. If the exhaust opening on the pump is 1½", a short nipple of 1½" diameter should be screwed into the pump. Then a reducing coupling from 2" or 2½" to 1½" should be put on this nipple, and a 2" or 2½" pipe should be used to the top.

As the air emerges from the 1½" nipple into the larger pipe, it expands and its velocity drops, and therefore it lets go of the entrained oil, which will then run back down into the pump by gravity. Much oil can be saved and possible damage to the pump can be avoided by this artifice. The writer, when a plant superintendent, learned this trick the hard and expensive way.

The same results could be obtained by installing an enormous air-water-

Continued on page 84



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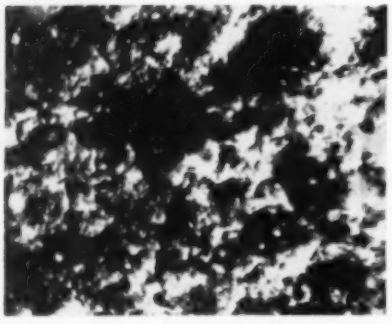

GLAZED WITH 100% SALT
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oil separator capable of handling the increased load due to the greater volume of air from admission of outside air into the system to secure low vacuum such as are used in making textured brick, or insulating brick.

Properly engineered the vacuum piping system gives little trouble and requires only infrequent servicing. Improperly engineered it is a constant source of trouble, expense, and poor efficiency.

When a plant first begins to use the vacuum process they usually provide catalog sized piping for the pump they start with. In a few years they step up the rate of extrusion per hour, or they desire to process their clay at a lower absolute pressure, and install a pump of greater capacity.

Then, for the larger pump and greater volume of air, the original size of the piping is inadequate and they fail to realize all of the benefits of the larger pump. It always pays to use greatly over sized piping in a vacuum system. One plant, making very high quality specialty ware uses large diameter oil field casing and flanged couplings.

Volume Of Air Removed

There is little authoritative information (the writer cannot find any) as to the volume of air, water-vapor, and other minor gases, that are removed from the clay in the vacuum system.

The writer has made many observations, on different plants, and on different products, and believes that for heavy clay products the volume of air, etc. to be provided for ranges roughly between .004 to .01 cubic feet per burned pound of product. If over .01 cu. ft. per burned pound is encountered it is usually traceable to air leaks somewhere into the vacuum system.

Workers Make Difference

The volume of air to be provided for, in estimating the size of the pump and piping, depends to a great extent on the calibre of the men operating the plant. If they are inclined to be careless about minor details, it is well to estimate for .008 to .01 cu. ft. of air per pound of burned clay. If

they are careful operators who promptly attend to minor details a good estimate is from .004 to .006 cu. ft. of air per pound. A very tight body may contain even less.

It is one of the quirks of human nature that a plant superintendent who would not think of installing an air compressor system, or water pump system, without a check valve cannot understand why he should use a check valve in the line between his vacuum chamber and vacuum pump.

Installing Check Valve

The check valve in a vacuum system should be of the "low-pressure" type; and the pipe fitter who installs it should be instructed to put it in "backwards" as he invariably puts it in as he would in an air compressor system, and it checks the flow of air from the vacuum chamber into the pump. It should be installed to check a flow of air from the vacuum pump into the vacuum chamber.

Then, if the pump's motor suddenly kicks off, when the vacuum chamber is under a high vacuum, a hurricane-like rush of air backwards through the pump does not suck all of the oil out of the pump, shake the pump to its' foundation, strain the vanes in the pump, nor tear up the filter element in the vacuum filter.

Vacuum Filters

Considerable thought should be given to the vacuum filter. It so happened that one company had to purchase a new filter for their system. They got a price from a clay machinery company. It seemed high. They got a price from another clay equipment manufacturer and it, too, was high.

The local mill, mine, and hardware salesman happened in about this time, and looked into his catalog, and found that he could supply a filter for about 1/6th of the price asked by the machinery companies. His filter was purchased, installed, and forgotten.

About this time there was a mysterious drop in the vacuum on the vacuum chamber. The system was examined but the trouble could not be located. This company had about decided that they would have to purchase a larger vacuum pump, and the writer was called in.

Continued on page 86

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Moldit castable is poured into openings in the top course of BLOK. Castable flows smoothly down and to the right and left, filling and bonding all the BLOK. No individual bonding of the BLOK is required.

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SEANOR Continued

It was found that their vacuum filter had an exceptionally high resistance to flow and was reducing the vacuum between the vacuum chamber and the pump by around 2.00". When a proper filter was installed, having a resistance of about ¼", a larger pump was not needed. The filter purchased from the hardware co. was very good if it had been used for the purpose for which it was designed.

It took a pressure head of almost 1 psi to push air through it whereas in a vacuum system a filter requiring a low pressure head of around ⅛ psi should be used. In this case, the high resistance filter was killing about 7% of the pump's capacity, and the low resistance filter handicapped the capacity of the pump by less than 1%. If the filter is too small, or has too high a resistance it will kill much of the pump's capacity.

In another case a plant was processing their clay at a pressure of 4.00" absolute and they wished to reduce this to about 2.00". At first thought it appeared that they would have to replace their pump with one having twice the CFM capacity. However, when the filter and piping system were examined they were found to be totally inadequate; and when replaced with properly engineered components this plant was able to process at 2.25" absolute without replacing their pump.

Vacuum Seals

A factor in the vacuum seal problem is that tempered clay, or mud, must be fed into the vacuum chamber, continuously, at a uniform volume per minute. This is done by the "Seal-Auger".

Another factor is that this mud must be removed, promptly, from the vacuum chamber. This is done by the extruding auger which pushes it out through the brick or tile die. The capacity of the extruding auger must lead, or exceed, the capacity of the "Seal-Auger" at all times. Otherwise, the vacuum chamber would eventually fill up with mud.

Another factor is that atmospheric pressure, or the pressure of the air surrounding the machine, must be prevented from pushing air into the vacuum chamber. The "Seal" against entry of air into the vacuum chamber, from the pug mill side, or entry side, is accomplished by a resistance to flow.

This resistance to flow is partially provided by the weight of the clay in the "seal-plug" of clay between the end of the "seal-auger" and the back of the "Seal-Die". Part of the resistance to flow is provided by frictional resistance to flow through the net opening between the "seal-die" and the "seal-core".

Continued Next Month

Changes of Address

If you're due to change your address, be sure to avoid missing an issue of B&CR. Please notify us of your new address at least six weeks in advance of moving date. Write: BRICK & CLAY RECORD, 5 South Wabash Ave., Chicago 3, Ill. Be sure to give both old and new address, zone number, and your name.

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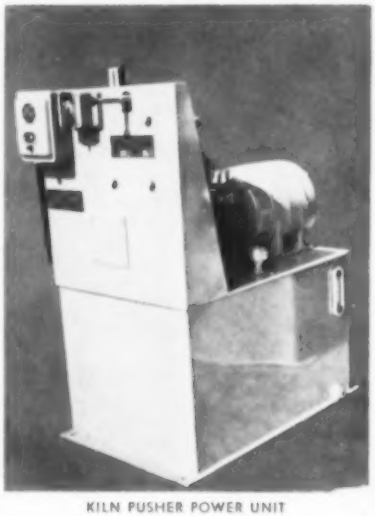
With manhours so vitally important these days, your fireman's time is valuable. Automatic kiln and dryer pushers can cut the necessity of his presence during charging up to 50%, thus allowing an easier schedule or less manpower.



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Rep. by FORREST A. PASCHAL, Box 289, Siler City, N. C.

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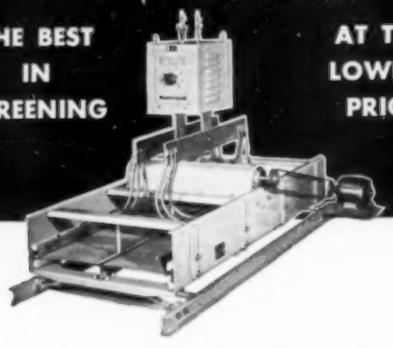

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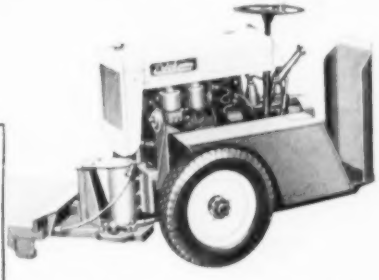

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Associates: *Philadelphia Quartz Co. of Calif., Berkeley & Los Angeles, Calif.; Tacoma, Wash.; National Silicates Limited, Toronto, Canada.*

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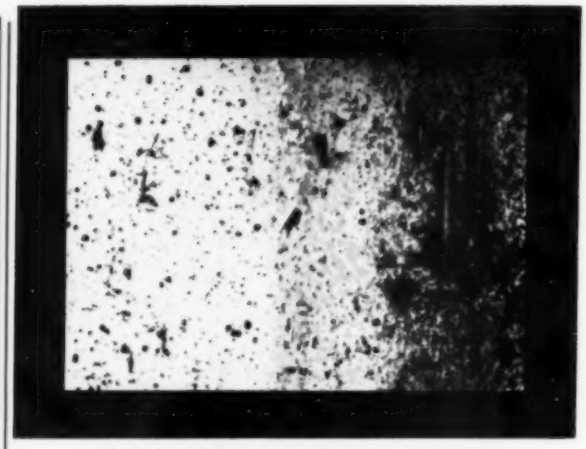

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For Recommending

SURE KLEAN MASONRY CLEANERS

NEVER BEFORE has it been possible to clean masonry surfaces so easily, so quickly, so economically—and safely—as with the **new**

WATER-CLEAR SURE KLEAN 600 DETERGENT!

This wonderfully efficient cleaner removes excess mortar from brick or glazed tile (non-metallic) **better than the strongest solution of muriatic acid or than slow, troublesome powder mixes**—and, when used according to directions, even the strongest solution of the new **water-clear** Sure Klean 600 can be used **safely.** No cleaning-material stains result.

For those who do not want a detergent, recommend

SURE KLEAN No. 101 LIME SOLVENT!

Dissolves lime and calcium formation FAST—takes less time on clean-up job. Lowers clean-up cost, too.

New, easy, safe way to remove vanadium salt stains.

SURE KLEAN 800 STAIN REMOVER

quickly dissolves metallic salt that causes green (or brown) efflorescence on light-colored brick. Simply brush on, let stand until stain disappears, then rinse. Safe to use.

Sure Klean products packaged in handy 1-gal. and 5-gal. "Cubitainers"—

POLYETHYLENE CONTAINERS and 15, 30 and 55-gallon PLASTISOL lined drums.

So that you may unreservedly recommend these marvelous masonry cleaners to contractors using your products . . .

Write for Sure Klean Bulletins!

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Manufactured by
The Process Solvent Co., Inc.
1040 Chelsea Trafficway Kansas City, Kansas

Texas University Problem: Design Brick Plant

The Architectural Engineering Department of the University of Texas solved a problem with a single phone call recently when Hale Coffeen, assistant professor, put a trade association to work for his class.

Like most schools, Texas includes an industrial problem in its curriculum centering on flow of material through a factory, and tied in with architectural design. Coffeen's initial discussion was with Gil Meland, Chief Engineer for the Clay Products Association of the Southwest. Together they outlined a six-week problem which involved the class in design of a brick plant.

Of course, one six-weeks' study of this type is not going to produce students who are expert in the field of designing brick plants. The big advantage to the student is the close association they have with top production men who are struggling with problems of plant operation and modernization. Also, they are the men who will be acting as owner's representatives; the men the student will be dealing with after graduation. The benefit to the instructor is obvious. He can have the best professional people contacted and brought to him with a minimum of trouble on his part.

Define, Limit Problem

Early in the discussions, it became obvious that a production man would be needed to define and limit the problem. Like most associations, Clay Products is interested in the correct use of its members' products. Meland, for instance, is a registered professional engineer and an expert in the structural application of brick and tile. In addition he is thoroughly familiar with industry production personnel. Knowing the right men to contact, he was able to save time and trouble.

After discussions with Tom Butler, Jr., Vice-President of the Elgin-Butler Brick Co., Coffeen wrote the problem. In the meantime, the Association arranged for busses on successive class days to take the students on tours of two member plants—The Elgin Butler

Continued on next page

Dick Taylor, Executive Secretary, Clay Products Association of the Southwest. Mike Butler, Elgin-Butler Brick Company. James Babb and Arthur Gibbons, Elgin Standard Brick Company, and Hale Coffeen, Assistant Professor, Architectural Engineering Department, University of Texas.

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An ideal application for this 30 HP Brook Totally Enclosed, Fan Cooled, Slip Ring Motor—built to resist heat or cold, dust, fumes, moisture. It is driving an induced draft fan handling washed flue gas and raw air at 350°F. in an American Incinerator Corp. system processing municipal waste. Brook A.C. Motors are winning praise in every industry for dependable service and overall economy. They can save for you! Warehouses, Sales Representatives, Dealers throughout the country. Send for literature.

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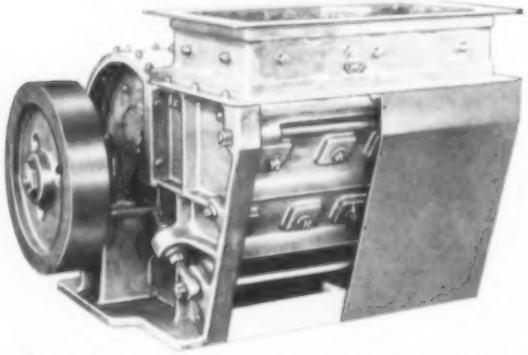

for high volume reduction with minimum maintenance rely on hammermills backed by American's 50 years of experience.

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and the Elgin Standard Brick Companies—actually a trip of 37 miles from the University. Here the students were shown the processes involved in the manufacture of brick and tile, and given an opportunity to question the factory people who were acting as guides.

Immediately following the plant tours, plant superintendents, Wooten and Burke, from each company, spent an afternoon in class answering detailed questions as the students began their preliminary drawings.

Engineer Evaluates

In about three weeks, when the prelims were completed, the Association arranged for Luke Gresham, Chairman of the Southwest Section of the American Ceramic Society to spend the day evaluating the student work in terms of actual practice. Gresham is a ceramic engineer and is district superintendent for the Acme Brick Co. with responsibility for the production of five plants.

On completion of the final drawings, Mike Butler of the Elgin-Butler Brick Co. and Arthur Gibbons and James Babb, Ceramic Engineers with the Elgin Standard Brick Co. came to class and went over the work of the students with Coffeen. A sampling of the student work was shown to a meeting of the board of directors of the Association and evoked considerable interest. Thus top management got a look at student work and the professor got the best possible help in criticizing and judging the problem.

Office Building

As a followup the class designed an administration and sales office building. The student spent two weeks on this phase of the problem. Then Meland conducted a class discussion on the overall aspects of the problem. His point was that Associations, properly employed, can be valuable to the college and later to the professional man—the architect and the engineer. In the modern construction industry, associations are becoming storehouses of information which simply isn't available anywhere else.

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- ★ You turn culls into No. 1 Premium brick.
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BELOW: (Left) Note handsome texture provided by rockface brick on new Sanger's department store (right) in fabulous Big Town shopping center in Dallas, Texas.

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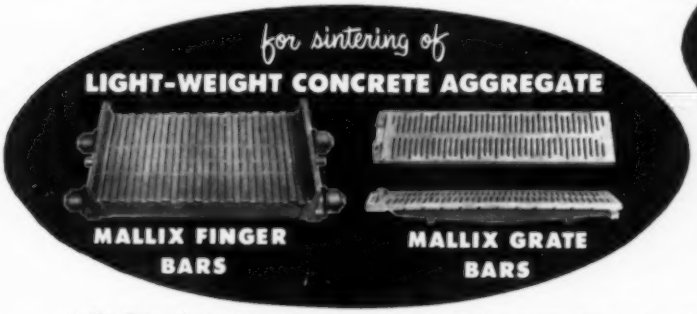

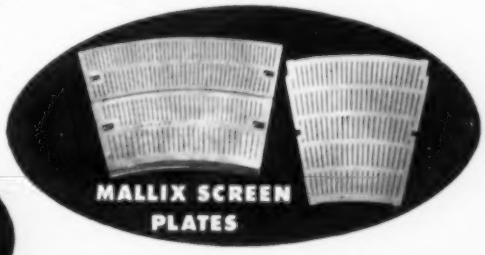

Since Mallix plates are harder and stronger than most, slots can be more closely spaced. Uniform sizing is assured by their smooth, clean openings. Their tapered slot design keeps material flowing freely.

Mallix finger bars give uniform air distribution and have excellent self-cleaning properties. Can be furnished for any desired slot openings.

Tough Mallix grate bars will give you economical grate bar cost per ton of light-weight concrete aggregate. Straight slot, pinhole or herringbone type bars are available.

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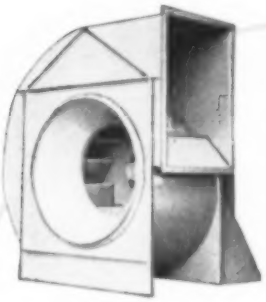
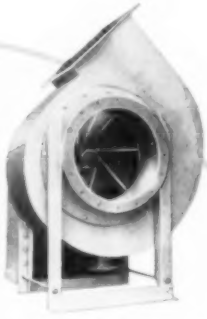
IN KILNS—DRYERS—SINTERING BELTS

Robinson air handling equipment for the ceramic industry is custom-engineered to meet the specific requirements designed into your tunnel kilns, periodic kilns, sintering belts, or product dryers. Long experience in improving air handling techniques gives Robinson engineers quick understanding of your problem, plus the know-how for solving it. Every Robinson solution has 3 ingredients: (1) efficient air handling, (2) low power consumption, and (3) extended mechanical life.

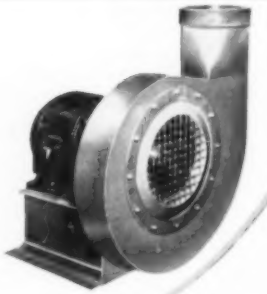


Type J Fan
600 to 450,000 cfm
Bulletin 2500



Type AE Exhauster
400 to 90,000 cfm
Bulletin 5100

Sulky Type
Man Cooling Fan
Bulletin 8001



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119 HENDERSON STREET, ZELIENOPLE, PA.

Home Building Consultant Offered by BTS

Services of a qualified Home Building Consultant are now available to North Carolina home building contractors from Brick & Tile Service of Greensboro.

The position of consultant is held by Jack Glass who has been with the FHA for the past five years. The intention of the BTS program is to assure buyers of the most quality possible for the money, according to the announcement.

B&W Refractories Gets New Packages

Designed to provide ready brand and product identification no matter how the packages are stacked, new style cartons, bags and drums have been put into use by the Refractories Div. of the Babcock & Wilsox Co.

All product containers now feature a single design theme with the division's trademark, a "Hero's engine within an octagon containing the words Refractories Division." Colors are black, red and kraft.

Another new feature is the use of zip-tabs, allowing easy access to materials in packages. The tabs are at each end of the package to make opening easier. The bottom of the package serves as a container or tray.

B&W 1958 Net Income of $13,035,000

The annual report for Babcock & Wilsox Co. showed net income for 1958 of $13.0 million or $2.13 per share. These figures compare to 1957's $14.2 million or $2.69.

It was pointed out that in 1957 B&W had income augmented by $2.2 million from the sale of a minority interest in the Lummus Co.

Pres. M. Nielson noted that earnings "in the recession year" increased successivly during each quarter.

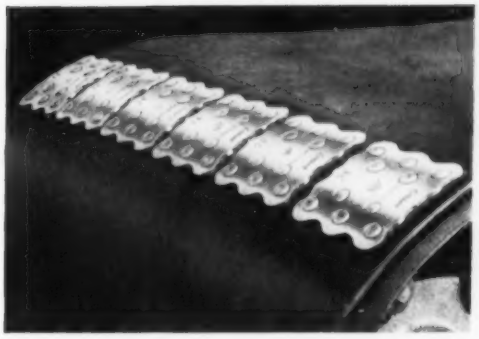
The report disclosed that during the past year the company spent $18.1 million for plant, property and equipment.

Lovell's Stewart Is "Boss of Year"

Ralph E. Stewart, vice president and manager of Lovell Clay Products Billings, Mont. plant was honored recently for outstanding service to the community.

He was named "Boss of the Year" by the Billings Jaycees and cited for his 1958 community service activities. In addition to the framed certificate shown above, Stewart received a concrete block with the citation incised—the block "gleefully" donated by Lovell Clay's competition.

Excessive abrasive conditions now solved!



Conveyor belting subjected to heavy abrasive work can now be readily joined for maximum service with the new CRESCENT Countersunk Belt Fasteners. The CRESCENT Countersunk-Head Rivets are driven flush with the surface of the CRESCENT Countersunk Plates, thereby reducing wear to a very minimum.

A hammer is the only tool required to make a quick, tight and long-lived joining. The CRESCENT Countersunk-Head Rivets are self-piercing and self-clinching, thus no holes to align and bore . . . a big time saver.

Don't gamble . . . our extensive experience over the years in joining and repairing conveyor, elevator and transmission belting of any length, thickness and width is at your disposal without obligation. Get the facts today!

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CRESCENT BELT FASTENERS fastest, most durable and most economical method of joining conveyor, elevator and transmission belting

NOW–FIREPROOFED *Conveyor Belting* . . .

new SCANDURA

The original P.V.C. coated *Conveyor* BELTING

Your Safety Engineer will appreciate the non-inflammable qualities of this new amazing conveyor belt. Your Production Engineer will appreciate these unique operational features:

SCANDURA *Conveyor* **BELTING**

- **Withstands abrasions that would ruin other belts.**
- **Exceptionally tenacious in holding fasteners.**
- **Solid-woven base with covers that will not strip, or tear.**
- **Not affected by water, dilute acids, etc. Rot-proof and mildew-proof.**
- **Works in temperatures ranging from 22° below to 212° above.**

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We also produce dependable, long-lasting and economical

FENTONIA & SCANDINAVIA for conveyor belting

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Write for free catalogue showing how you can use SCANDURA to advantage in your industry.

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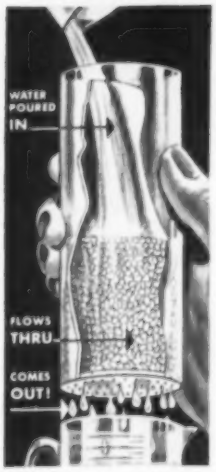
ZONOLITE®

Announces

A NEW KIND OF INSULATION

FOR MASONRY WALLS!



HERE'S PROOF! Simple test reveals how new Zonolite repels water penetration.

Actually SHEDS WATER

Now helps you sell more cavity wall jobs!

New Zonolite Masonry Fill Insulation is *different*. Because Zonolite's exclusive patented process won't let water penetrate, "U" values are lowered. Walls filled with this new material have *twice* the insulating value. That's why Zonolite now makes structural clay walls more practical, helps you get more jobs.

Beats other installation costs by as much as 60%

New Zonolite Masonry Fill Insulation now offers the easy, fast, low-cost way to insulate walls. Filling cavities is easy. Poured from lightweight bags, it flows freely into cavities around reinforcing and other obstructions. No fitting, cutting, measuring. Saves time, labor.

PERFECT FOR CAVITY WALL CONSTRUCTION ON ALL KINDS OF JOBS

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☐ Homes ☐ Motels ☐ Medical Centers
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I'm interested! Please send me complete selling information and technical data, G-158, on Zonolite Masonry Fill Insulation.

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GLUTRIN

(liquid)

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Especially suitable for increasing the molding and dry strength of

- **BRICK**
- **CLAY REFRACTORIES**
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- **STRUCTURAL TILE**
- **SEWER PIPE**
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- **FLUE LINING**

Small amounts required—easy to use. Economical and larger production of first quality product absorbs the investment many times.

Many successful users. We'll be glad to submit samples and our suggestion on procedures and amount needed.

Robeson Process Company

P.O. Box 960 • Erie, Pa.

Narco Elects Ramsay VP-Administrative

W. R. Ramsay was elected vice-president-administrative of North American Refractories Co. at a board meeting on March 3 in Cleveland. Ramsay has been with Narco since June, 1957, as assistant to the president, E. W. Valensi.

Valensi reported that Ramsay and J. A. Stott, vice president-sales, were elected to the Narco executive committee. H. E. Stuhler, former president and board chairman, retired as of March 1.

The directors voted a 50c cash dividend on the outstanding shares of company stock, payable April 15.

Porter Adds Zircon For Glass Melting

A zircon brick for glass melting furnaces has been developed by Refractories Div., H. K. Porter Co., Inc. Made at Christy Works in St. Louis, the product has P.C.E. above cone 42. The brick are used as pavers for lining glass furnaces.

Said, Hawley Promoted by Gladding, McBean

A. R. Said has been elected executive vice president and a director of Gladding, McBean & Co., according to an announcement by C. W. Planje, president. Planje also announced that Addison Hawley has been elected a vice president.

Prior to the promotion, Said had been vice president-general manager of the Franciscan ware division. Hawley was general manager of the pipe products division.

Mex-R-Co. Establishes Caribbean Sales Territory

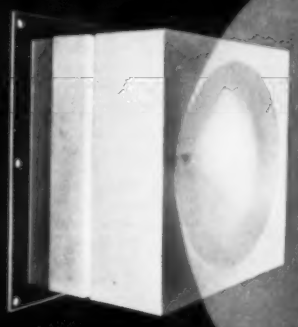
Luis Valdivieso has been transferred to San Juan, Puerto Rico from the Mexico, Mo. office of Mexico Refractories Co. to supervise the company's export sales in the Caribbean and Central American territory. Sales activities in the 17 countries under his supervision will be coordinated with 9 warehouse dealers already established at central locations.

Valdivieso has been connected with the Export Department of Mexico Refractories for the past 12 years and has travelled extensively in the Caribbean area. His headquarters office in San Juan will handle refractories manufactured by both Mexico Refractories and the Norton Co. of Worcester, Mass.

H. M. Sears Dies

Howard M. Sears, 63, salesman for Christy Firebrick Co. of St. Louis, was killed in an automobile accident west of Dayton, Tex. on Feb. 27.

PLENTY OF INTENSE HEAT
BUT NO FLAME IMPINGEMENT



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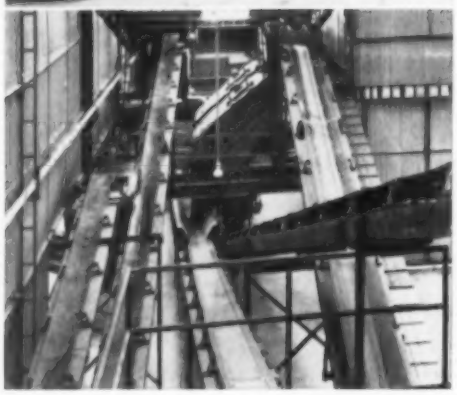
Hendryx-built ceramic plants are designed for high product quality, at low operating cost



Among the modern plants of the U.S., this giant Sugarcreek, O. Plant of the Belden Brick Company has a capacity of 200,000 brick daily under one roof. The plant measures 225 x 900 feet and includes a warehouse. Crushing and grinding is done in the separate building shown.

Hendryx tunnel kilns are designed for firing all types of heavy clay products and in all lengths from 150 to 350 feet, depending upon capacity required. Featured are three zones of automatic firing control and automatically controlled quenching and annealing — a departure from conventional practices.

Hendryx equipment for clay grinding, screening and blending is designed for 100% flexibility. Three or more kinds of raw material can be proportioned before grinding or ground separately before blending. Screen sizing can be adjusted without changing screen cloth.

In this single-level grinding and screening plant, screens are seen at top center. The conveyors at right handle material to and from grinding equipment. Left, belts take ground material from bins to extrusion machines.

Hendryx ceramic plant design keeps the accent on the kind of shortcuts that produce tangible operating cost economies — in man-hours, in power consumption, in maintenance — at the same time improving product quality.

Hendryx engineering is a complete package, comprising buildings, clay handling, crushing, mixing, drying rooms, continuous dryers, and tunnel kilns — all of the latest, most efficient design — with complete supervision of construction, assembly and installation.

It will pay you to consult Hendryx when planning your new ceramic plant or replacement facilities.

HENDRYX
INDUSTRIAL DESIGN

DWIGHT B. HENDRYX AND ASSOCIATES
6621 Darlington Road
PITTSBURGH 17, PA.

Ferd Merk Honored By Stark Ceramics

Fred Merk, veteran of 48 years with Stark Ceramics, Inc., of Canton, Ohio, was honored on Feb. 27 at a surprise dinner party attended by 40 officers and supervisors of the company.

He was given a wrist watch and other gifts with Fred Blosser, production manager and vice president, serving as MC. Merk, although retiring, will be retained as a consultant.

To show how far Merk, and Stark, have come in one man's career, here's a highly condensed summary of what's happened in his time at Stark: Began employment with company April 10, 1910, when there were only 4 employees. Supervised grading for first kiln, set of buildings and railroad siding. Stripping of clay for first kiln was done by wheelbarrow in 1910. Furnished teams for plant—paid 30c per hour which included shodding teams, repair of harnesses and feeding. Laborers paid 15c per hour—12 hour day. In 1911 stripped clay with teams and slip scraper. Purchased first (used) shovel for stripping in 1916. Received second shovel in 1918 which changed stripping operations.

In 1919 installed larger motors for clay haulage. Supervised coal and clay mining until 1927. Left plant in 1927 to build Shady Hollow Clubhouse and Golf Course. Returned to plant in 1930 as mine foreman, also supervised construction of "B" Plant and had charge of power facilities. Made Assistant Superintendent in 1938. Made Superintendent in 1952. 1948—Had charge of constructing five company houses on Route 30 in East Canton. 1956—Supervised building of tunnel kiln.

As the 6 x 10′ cars are loaded, the cars are lowered by a hydraulic lowervator so that the top of the unfinished settling is at constant level, allowing setting with minimum of exertion and effort. This method has been found to allow use of fewer offbearers in the pressing department.

Car Loading

The stiff mud line features double pugging into a separate extruder. A storage bin over the stiff mud area is filled automatically from batching, with material drawn as needed by a belt feeder driven through a Reeves Vari-Drive. The first pug is 10′ long with discharge fitted with a shredder. Clay from the shredder falls into a shorter 7′ pug mill, where it is again pugged and discharged into the de-airing extruder through a sealing auger, all Bonnot equipment.

The column is cut by a Bonnot hydraulically operated reciprocating cutter. The brick can then be taken directly from the belt, repressed, and set on the tunnel kiln car.

Although only one repress has been installed, the stiff mud line has the capacity for three; space has been left in the layout for two more.

Production from both the stiff mud line and the presses is held in the heated holding area until ready for the dryer. A three tunneled, 140′ long, Hendryx-designed dryer is operated with waste heat from the cooling section of the tunnel kiln. Further use of the waste heat is made for heating the building during winter.

Five Robinson fans are used for recirculation in the dryer. The 140′ length is divided into 5 control zones, to keep drying under full control during the 44 hour cycle. The first two zones have humidity control areas, with each operating independently if desired. The following three zones are on temperature control.

Air entering the discharge end of the dryer tunnels is blended with outside and recirculated air to maintain 300°.

Movement through the tunnels is with Star hydraulic pushers operating on the same schedule as the kiln. As needed, cars are taken from the dryer and moved to the Harrop kiln.

Kiln's Unusual Features

This kiln, a product of a long evolution of tunnels used for refractory firing, incorporates in its' design exceptionally sophisticated controls and flexible operating procedures.

With 415′ of total length, the kiln provides for 41 of the 10′ cars. One feature that is immediately noticeable is the relatively low setting on the cars and the exceptionally thick car top structure.

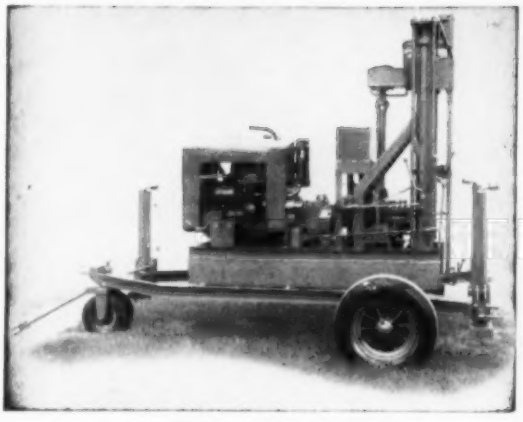
With the long experience in tunnel kiln operation at Farber, the operators have found that a low setting was advantageous to the production of uniform ware. For this reason, the feature was included in the design of the new kiln and incorporated into the older kiln that has been rebuilt.

Continued on page 99

IN MINUTES . . .
INSTEAD OF DAYS

Samples obtained from depths up to 100 feet with the all new

Parmanco



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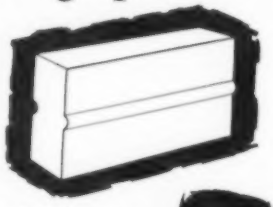

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There is a sequence of Orton Cones for your firing requirements, regardless of the temperature range in which you work. Also, variations and deterioration of temperature measuring devices can be easily detected through the use of Orton Cones. If you are not currently fully utilizing this means of control, we suggest you investigate its potential at once. You'll find that proper use of cones will point the way to better firing and more uniform ware.

A 56-page booklet, "The Properties and Uses of Pyrometric Cones", and the Foundation's Temperature Equivalent Table are available upon request.

Foreign Sales: International Division, The Ferro Corporation, 4150 E. 56th St., Cleveland, O., or the Foundation

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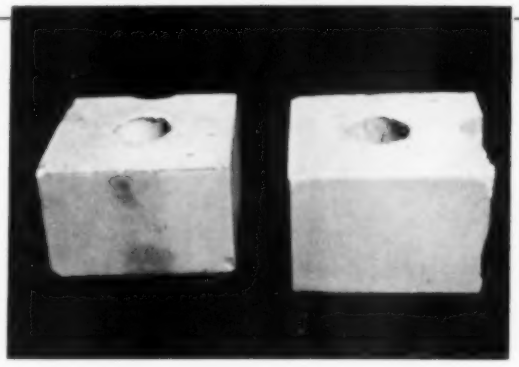
CONTROL GREEN SCUM with MINERVA FLOURSPAR



A little green scum can ruin a fine reputation. Here is an example of a beautiful light cream brick, fired at Cone #1 and with a 10% absorption.

In the case on the half brick at the left, no fluorspar was added and green scum developed after less than a month of outdoor exposure.

The half brick at the right was produced in the same way from the same materials, but with 25 lbs. of fluorspar added per ton of clay, or slightly more than 1%. The cost of the fluorspar additive was less than 50 cents per ton of clay.

MINERVA Ceramic Fluorspars are the recognized remedy for combatting vanadium green scum in buff, cream, pastel and white brick. It is particularly needed where delicate color control makes hard firing and resulting vitrification objectionable.

Fluorspar, when finely ground and thoroughly mixed with the clay at the dry-pan, acts as a flux at low temperatures, vitrifying the interior of the brick. Since green scum is caused by the oxidation of soluble salts of vanadium and iron, which have migrated from inside of a porous brick, upon alternate wetting and drying, the decrease in permeability through vitrification prevents these troublesome salts from being carried to the surface of the brick.

Ask for a trial sample of MINERVA FLUORSPAR to try on your own ware. MINERVA'S clay-consulting engineer is at your service on green scumming problems at no charge.

MINERVA COMPANY

(A DIVISION OF MINERAL OIL COMPANY)

"Fluorspar"

Box 531, ELDORADO, ILLINOIS

NORTH AMERICAN REFRACTORIES Continued

The car top structure was deliberately made heavy to dissipate the effect of the high firing temperature on the car itself. With Cone 23 firing, maintenance is a problem.

The kiln has an under-car cooling system by which temperatures in that area can be strictly controlled. An American blower is connected to a duct system which runs down both sides of the kiln toward charge end. These ducts, 220′ long and buried beneath the floor, are tapped every 25′. At these tap points, air is blown toward the charging end of the kiln.

By balancing pressures with dampers and varying flow rates and temperature (measured on 7 thermocouples) can be maintained under the kiln cars. The result of this is shown in lessened maintenance and longer car life.

Kiln Firing

Three zones in the firing section of the kiln are controlled with Radiomatic sensing instruments working into Brown recording controllers.

Three types of burners are used to match each of the control zones. The first set of 13 burners are North American Mfg. Co. excess air, followed by 28 inspiration and finally by 40 pipe jets. The furnace section has, as a counterpart in the cooling area, cooling air recirculating equipment and a quick cooling section that features both direct blast and bleedoff.

This latter option allows the kiln operator to adjust the situation to meet changing requirements of different car loadings in relation to weather or other conditions.

Typical firing rates on the kiln call for cars to be charged at the rate of 16 a day with firing and cooling curve, at this rate.

On removal from the kiln, the cars are moved to the unloading dock, car top high, extending a good part of the kiln length. This set-up allows minimum handling in the grading and palletizing operation.

For practical purposes, all production is palletized and either sent to the truck dock for truck loading, to the rail siding, or to storage. The storage building, by Varco, is 140 x 160′; like the 50 x 160′ kiln building and the 140 x 130′ building housing production facilities, these buildings were constructed of pipe frame, aluminum sheeting, with plastic sky lights.

With plants located in Ohio, Kentucky, Pennsylvania, and Missouri, North American is able to produce an impressive list of high quality refractory items, with specialties produced at the Farber and Curwensville, Pa. plants.

With increasing demand for the newer types of refractories, Narco's new facilities and the expansion room, plus their new Research Center at Curwensville, Pa., North American feels that this new field will become increasingly important in their operation.

The Farber operation is directed by C. P. Walters, Superintendent, who in turn reports to E. A. Williams, Jr., Manager of Operations, in the Cleveland home office. A large part of the design of the new plant was done by Dwight B. Hendryx & Associates.

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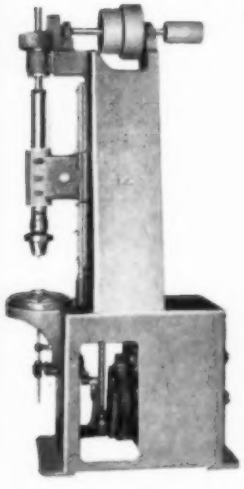

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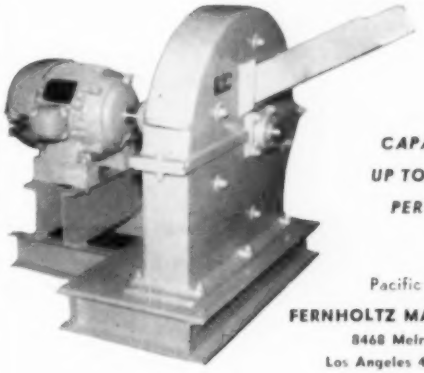

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DEPLETION Continued

by the application of large capital investments, his company would receive less under the advocated scheme for the depletion of his clay than he would if his operation were less efficient.

Further, Burns noted that the Treasury plan would not spell out the procedure to be used when new products are developed or changes in technique take place.

A. R. Walters, Carter-Waters Corp., appeared on behalf of ESCSI and its member companies. He characterized the Treasury proposals as discriminating against the lightweight aggregate industry in that they would allow certain processes to competing industry but not to LW producers.

Waters repeated opinions by other witnesses that Congress can change the percentage rate of the depletion allowance if it feels some minerals are enjoying excessive allowances. But he felt that to strike down the "first marketable product" method of arriving at a value would impose great hardships on producers ill able to pay for litigation with the Treasury.

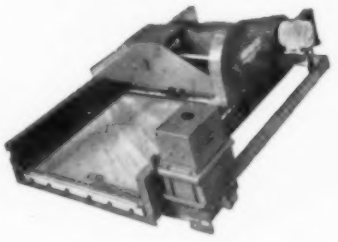
Vinson Speaks

Congressman Carl Vinson (D-Ga.) appeared before the Committee to flatly state that the Treasury really seeks an 80% reduction in the present depletion allowance for the brick and tile industry. He also said that the Treasury used "far fetched and grossly exaggerated examples" to support its contention that a "problem" exists in the present law.

Vinson suggested that the brick and tile industry was chosen by the Treasury to be the object of further persecution so that "the whole question of depletion allowance on all items can be made subject to further Congressional action."

Kaiser Makes Alumina Spheres

Availability of a new type of active alumina in the form of spheres has been announced by Kaiser Aluminum & Chemical Corp. The spheres are used as absorbents for drying a variety of gases, liquids and vapors.



FlexElex® Integrated Heating is Out of the Bird's Nest Stage

The new Model E Leahy® Screen with FlexElex Integrated Heating has long since consigned to antiquity the bird's nest of multiple flexible cables that clutters accessibility of the equipment and invites low electrical efficiency at the many points of connection.

Today, Leahy engineering is **first** in eliminating these worrysome, costly and inefficient connections. The modern Leahy Screen is equipped with short runs of oversize bus bars that connect the transformer as directly as possible to the jacket. Electrical and thermal efficiency are not only stepped up, but the chances of circuit breakdowns and connector failures reduce to an absolute minimum.

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Send for Bulletin 16-EH.

SEE OUR CATALOG IN Ceramic data book P-138, 139

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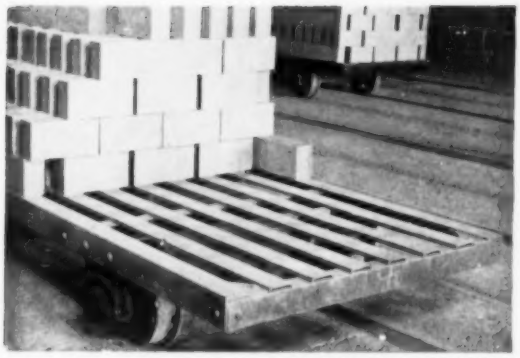

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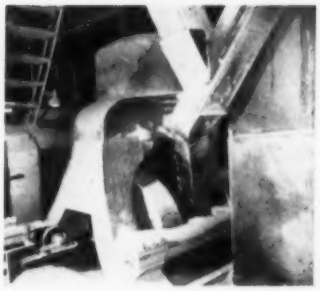

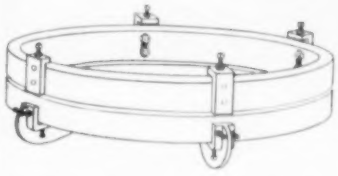

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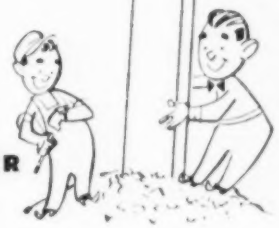

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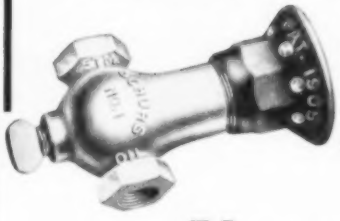

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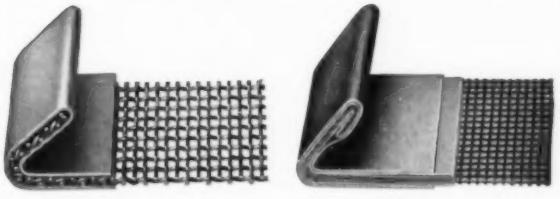

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FOR SALE: 1 used American rim discharge grinder and 2 used Leahy Model "D" screens.

FOR SALE—USED EQUIPMENT

CRUSHERS—2-1¼ x 3 (new), 9 x 16, 16 x 10, 13 x 24, 36 x 10, 20 x 36

SCREENS—3 x 10 double Tyler, 42" x 10' Cedar Rapids double, 60" x 12' double Robins, 60" x 12' triple Deister, 60" x 20' double Robins

PUG MILLS—9' Freese, 12' Bonnot, 10' double shaft American, 15' Chambers granulator

HAMMER MILLS—00 Sturtevant 10 HP, AKB Williams 25 HP, 36 x 42 Jeffrey 100 HP, 26 x 74 Penna. SXT 14 450 HP

BRICK MACHINES—#3 Steele, #233 American, #470 International, #30 Bonnot, De-airing—#30 Steele, 18" auger Bonnot

CUTTERS—#50 Steele Hand Reel, Automatic Steele #18 (10" & 14" belt), Freese C-25

ROTARY DRYERS—24" x 20', 33" x 18', 36" x 24', 44" x 25', 4' x 40', 5' x 40', 9' x 30'

FEEDERS—6 shaft Steele (even), 38" x 30" apron, 18" x 34' apron, 5' dia. Disc, 18" x 16' Farquar troughing

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3600 ft. of bulb angle rail suitable for tunnel kiln operation.
2 Farrar & Trefts boilers 200 H.P. with gas and oil burners.
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3 Gasoline locomotives
1 Chambers Pug Mill
1 Chambers Granulator
1 Chambers Royal Brick Machine
1 Hyster 75 with 14 ft. lift
1 Clark 6025 with 14 ft. lift
Pulleys of various sizes, faces and bores
2 Priester Brick Forks
40 Hauck gas Burners with Pipe
1 Marion #331 shovel with ¾ yd. bucket
125 ft. of 36 in. triple leather belting

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All sections rails and track supplies. New Wood Pallets made to your specifications.

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ROTARY KILNS: 11' x 155', 8' x 170', 8' x 125', 8' x 115', 8' x 50', 7'6" x 100', 6' x 60', 4' x 24'

ROTARY DRYERS: 8'8" x 70', 6' x 50', 4'8" x 32', 4' x 30', 3' x 15', 2' x 9'

HAMMERMILL: Penna. CRUSHER NON-CLOG, 400 HP, UNUSED, 1952, #DNC-5060

PUG MILLS: 30" x 14', 7" x 3'6", T347 88

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200' Clay Storage Shed Conveyor, 20", motor driven.

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MIXERS: #2 & #3 Simpson 7' Lehmann Boyd 4 mold, Gates 2 mold DRY PRESSES 7 & 9' DRY PANS, 8' WET PAN
MILLS: 4½ x 16", 5 x 9 Ball, 5 x 22, 6 x 22 Tube, 8 x 12 Rod, 10', 12' & 14' Pug.
CONVEYORS: 18", 24", 30", 36", 42" all lengths Troughing. Also Roller.
DRYERS: 4 x 20, 5 x 40, 6 x 50, 8 x 70, 8 x 170.
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DRY PANS—4', 7', 9'
HAMMER MILLS—6"x8" to 36"x42"
SMOOTH ROLLS—16x30, 30x36
DISINTEGRATERS—12", 18" & 24"
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SINGLE ROLL CRUSHER—30" x 30"
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HAND TILE PRESS
MIXERS—Lancaster EAG 3 & 4, Clearfield #610, Simpson #3, Blystone
SCREENS—Hummer 3x5, 3x10, 4x10 Cedar Rapids 3½ x 10
FANS, PRESSURE BLOWERS—Many Sizes
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DRY PANS—Clearfield 9', Chambers 9' air pressure controlled.
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BRICK MACHINE—Steele 30, with de-airing pump.
PUG MILLS—Bonnot 12", Chambers 10", pusher types.
FEEDERS—Bonnot 60" disc, Apron 30" wide 10' long.
CRUSHER—18" x 24" single roll, renewable teeth.
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Automatic Cutter: Freese Model C-25
Rotary Dryers & Kilns: 4'x20', 5'x30', 5'6"x50', 80"x60', 6'x120', 7'x180' 8'x125', 6—10'x150'
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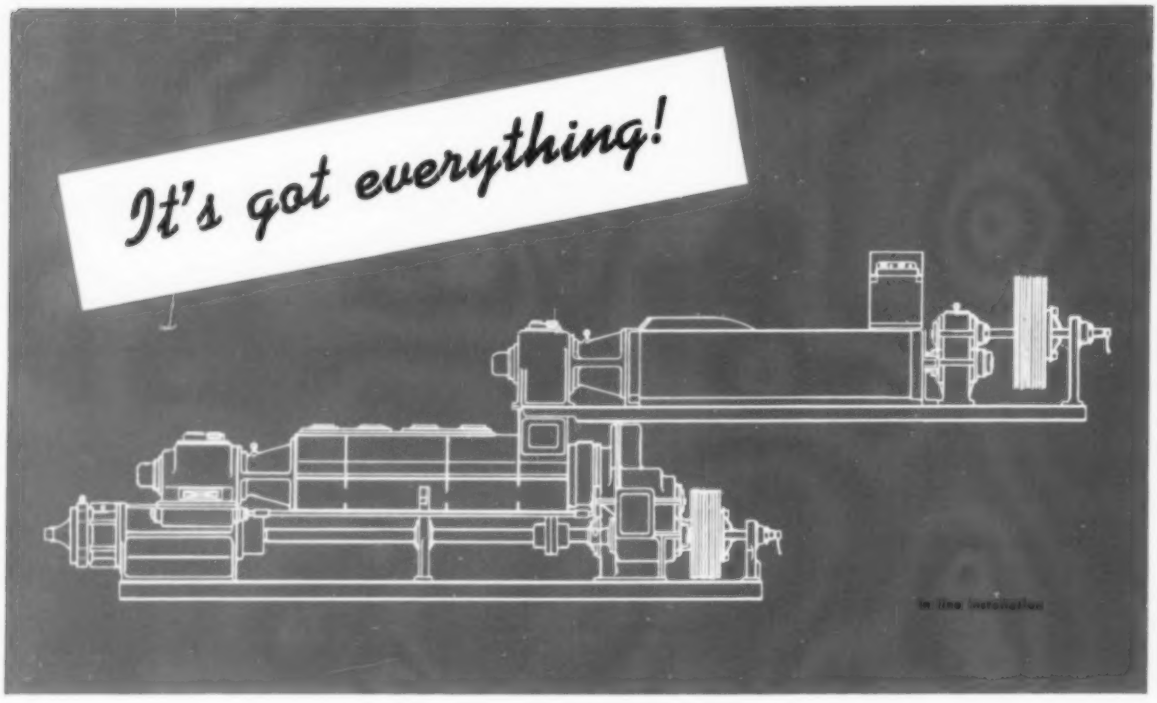

This powerful machine has the compactness of a combined machine plus the economy and versatility of separate drives. It can be made with an open pugmill or, as shown here, with a completely enclosed Vacuum Pugmill. This Vacuum Pugmill is fed by a Steele No. 50F Pug Sealer either in an in line position (as shown in the drawing) or at right angles. This arrangement provides 11'4" of open pugmill plus 10'7" of vacuum pugmill, both 30" ID.

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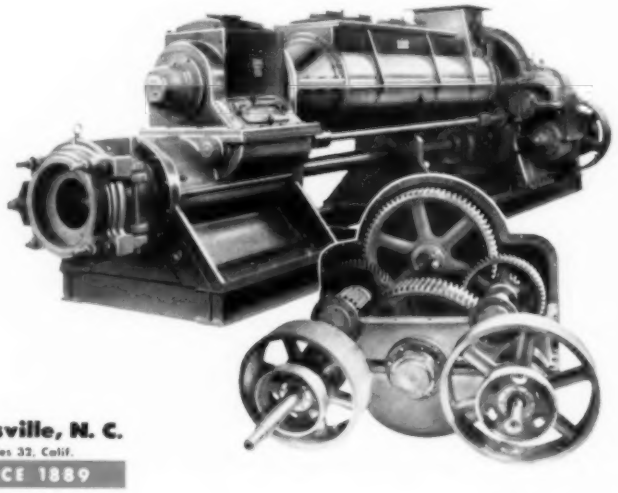
Capacity 100,000 to 140,000 brick per 8 hour day.

(Right) The Steele No. 60F Vacuum Separate Drive Combined DeAiring Machine

(Lower Right) Massive Gearing



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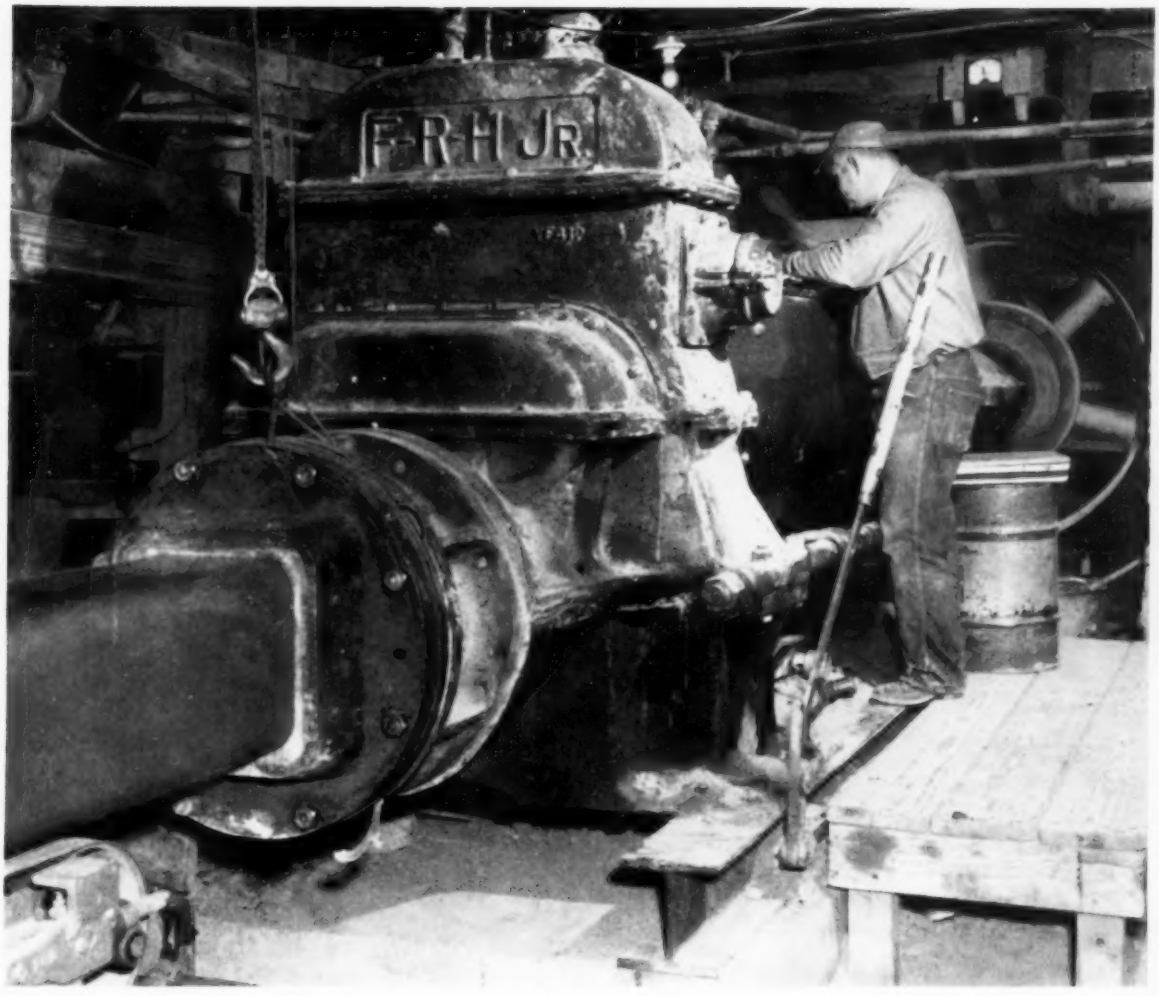

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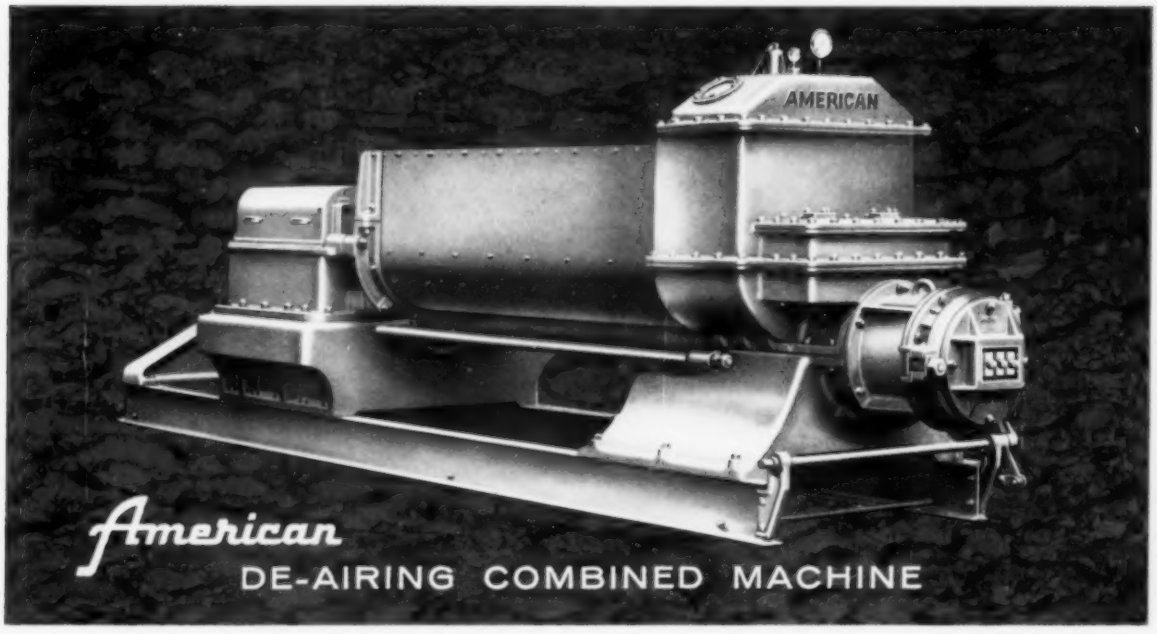

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